CALIFORNIA JOURNAL OF SECONDARY EDUCATION

FEBRUARY 1960

volume 35, number 2

A REPORT ON MATHEMATICS EDUCATION

PUPILS EVALUATE TEACHING

SYMPOSIUM THIS MONTH

NEW DESIGNS FOR THE SECONDARY SCHOOL SCHEDULE

SYMPOSIUM NEXT MONTH

IMPROVING LEARNING CONDITIONS FOR DELINQUENT AND PREDELINQUENT ADOLESCENTS

—Theme for the Year—

IMPROVING CONDITIONS FOR LEARNING

UNIVERSITY MICROFILMS
313 N. 1ST ST.
ANN ARBOR, MICH.

CONTENTS

FEBRUARY 1960 • VOLUME 35, NUMBER 2

71 **Editorial** Responsibility for Professional Performance

79 **Mathematics Comes of Age** Frank B. Lindsay

84 **The "Probing-Pen" Technique to Evaluate the Teaching-Learning Situation in the Classroom** Melvin E. Levison

SPECIAL FEATURES

87 **What's Happening in California Secondary Schools** William N. McGowan

91 **Symposium: New Designs for the Secondary School Schedule**

91 **Introduction: Nothing Ventured, Nothing Gained** Dwight W. Allen and Robert B. Moore, Coordinators

94 **Flexible Class Schedules** J. Lloyd Trump

96 **The Transformation of the Sacred Secondary Schedule** Robert J. Johnson and M. Delbert Lobb

106 **The Need for and Effects of Schedule Modification in Wahlquist, Roosevelt, and Hurricane High Schools** Matthew F. Noall

111 **Those First Steps** James D. Laurits

114 **A More Flexible Schedule at Fremont** Vernon Cordry

117 **Experimentation at Newton** Harold Howe II

119 **A Flexible Seven-Period Day in Junior High School** A. C. Stevens

122 **Experimenting with a Double Period Schedule at San Marcos High School** Donald L. Stillman

124 **Television and Schedule Revision in Utah** John A. Larsen

126 **New Designs for Secondary School Scheduling** William Jack Stone

131 **Secondary School Scheduling: A Break with the Pattern** David A. Sands

The *California Journal of Secondary Education* is published by the California Association of Secondary School Administrators eight months during the year and is issued in the calendar months of October to May, inclusive. Subscription is $4.00 per year; single copies, current school year, 70 cents; single copies, prior to current year, $1.00. Annual subscriptions in all countries in the International Postal Union, $4.50. Subscribers are requested to report at once any change of address, giving old as well as new addresses. Entered as second-class matter at the post office at Burlingame, California, under the Act of March 3, 1879. Address all business correspondence and requests for subscriptions or copies to *California Journal of Secondary Education*, 1705 Murchison Drive, Burlingame, California. To purchase microfilm volumes, write University Microfilms, Ann Arbor, Michigan.

© 1960 by California Association of Secondary School Administrators. Printed in the U.S.A.

EDITORIAL

RESPONSIBILITY FOR PROFESSIONAL PERFORMANCE

In the critical discussion which surrounds American education as the public and the profession seek to define more clearly their respective roles in determining the direction and the manner of conducting education, a louder and more insistent call may be heard from educators for what they refer to as "professional autonomy." This has been especially pronounced as the public probes into more and more facets of the educational enterprise. The net effect of this discussion, while at times vituperative and painful, has been and will likely continue to be beneficial. One facet we have been asked to comment upon as part of a national study of teacher education is that of the responsibility for professional performance. Who shall determine, and by what means, whether or not members of the educational profession are performing satisfactorily? What should be done when the highest standards of professional behavior and competence are not followed? Particularly is this problem of responsibility for performance being subjected to analysis as many states are undertaking to revise their licensing systems and their rules and regulations for issuing educational credentials.

The Alternatives

The question up for review is whether present licensing practices in teaching harm rather than benefit the public. Two logical positions may be taken: one, that no license should be required for a person to practice teaching, i.e., neither the state nor the profession should prescribe any minimum training or demonstrated competence; the other view is that current difficulties stem from inadequacies which need to be overcome in the schemes now used in licensing teachers. We have heard no serious defense of the first position that teachers need no specialized training whatever. Hence, our concern concentrates on the proper kind of training, best methods for determining when it has been obtained, and for ensuring that such training has produced the minimum competence so that the practitioner may, with reasonable public safety, practice his profession. When he is once licensed to practice, the further question remains: how and by whom should continued professional competence and standards of performance be enforced?

One Chief Accusation

A prominent argument currently advanced is that persons in training, by virtue of state licensing requirements, must devote too large a proportion of their training to learning how to teach and not enough to the subject matter which they are to teach. It is difficult to discover why this unfortunate dichotomy has arisen, and there is real danger lest it draw attention from the root difficulties. In the proper education of a teacher, content and method cannot be separated. The proper understanding of a subject does not automatically assure the capacity to teach it to others any more than does proper drill in methodology without fundamental command of the basic discipline insure proper teaching. Method and content have always been and shall continue to be indissolubly linked. Examples may be found where teachers are not teaching in the subject for which they have been prepared. The remedy lies not in requiring them to take more work in the subject they are not teaching! The remedy is to ensure their assignment to fields in which they are prepared. Examples, in even greater profusion, may be found where those teaching in their major subject encounter serious difficulty. Again, the remedy lies not simply in requiring more work in their subject matter. Difficulties in subject matter and methodological preparation may be noted and need correction in any thoroughgoing reform in teacher education.

That malpractice exists in education as in other professions no one can deny. In the public interest it should be stopped. Where lies the responsibility? How may the conditions be remedied? These are questions on which fateful consequences hang, both for the profession and the public.

Responsibility of the Profession

The legal authority for guaranteeing professional competence and standards rests with the people, acting through their agent the state. Nothing so crucial to the general welfare as education can be left solely to individual enterprise and initiative. In the state lies authority for regulating any of the areas of life related to the general welfare. Nonetheless, the state, by which is meant the public, must work through and depend upon the specialized knowledge and skill of the profession itself. While the state retains control, it has to a great extent no alternative but to depend upon the specialists. This is one of the fundamental dilemmas of modern society. How to reap the benefits of specialized knowledge and skill and still not be subjected to the tyrannical control of those who wield power through this knowledge and skill? This too is a fateful question.

To a large extent the solution to this problem depends upon the degree to which the members of the profession possess a strong sense of obligation to the general welfare and have been reared in the tradition of public

service. Accordingly when problems arise, as they have today, the basic responsibility for remedying difficulties is assumed immediately by the profession itself.

Why the Profession is Ultimately Responsible

The reasons for this ultimate responsibility are quite clear. While the public can detect the grossest forms of misconduct, the more subtle, pervasive, and important factors reveal themselves almost exclusively to those within the profession itself, to those whose knowledge and skill permit critical evaluations. It is in the inner recesses where the professional person daily practices his art, that his conduct and competence reveal themselves. Here he is judged by his peers according to the known standards and accepted facts of his profession. Hence, the public is substantially dependent upon the good will and the cooperation of the profession itself. Especially is this true in the day-by-day intimate supervision so necessary for maintenance of the highest standards of professional performance. Hence, for practical purposes, the BASIC RESPONSIBILITY for maintenance of standards in everyday practice of a profession must rest with the profession itself.

How this Assumption of Reponsibility May Be Assured

What specifically does this generalization mean? Who is responsible? In what manner? Such specifics are not easily delineated. Control needs to be exercised at several points.

Assignment of teachers. One prominent criticism today is that teachers are assigned to teach subjects in which they are inadequately prepared. Evidence suggests that this is true, although not as extensively as is often charged. But, as noted earlier, it is scarcely logical to assume that the remedy for this and other difficulties in education would be overcome merely if persons had more training in their subject matter. Teachers with history majors assigned to teach geometry would be no better geometry teachers had they been required to study more history. Since no teacher is presumed to be adequately trained to teach in all subject fields, we must look further than to the amount of subject matter in his preparation to find a correction for the misassignment of teachers.

Those who look mainly to the state licensing system to remedy this defect, however well intentioned, are misguided. To insist that a separate state license to teach be granted for each subject in the curriculum would only lead to a multiplicity of licenses, to tightening the stranglehold of bureaucracy upon a system already too encumbered by red tape. Effective enforcement of proper assignment and other standards depends upon a disciplined profession of local school administrators, accrediting agencies,

local teachers' associations, and individual practitioners. None of them should permit a teacher to undertake the teaching of a subject for which a teacher was unprepared. Here is the locale for the enforcement of proper standards of performance. Of ultimate importance, however, is the teacher himself. He is the final source of authority who must be relied upon to judge at the critical time, to enforce standards. He must be fully imbued with what is right and wrong, and he must have the authority to outlaw untenable conditions under which he is working, otherwise his "professional autonomy" becomes a hollow phrase. The individual practitioner requires support in maintaining standards. He needs to be buttressed by the authority of his organized profession and by the impartial judgment of an accrediting agency. These three—the practitioner, the organized profession, and the accrediting agency—working in concert can guarantee conditions necessary for optimum professional work and protect the interest of the public.

The Place of Tradition

Without a strong tradition of high standards of professional conduct and of proper conditions of work the individual practitioner has difficulty withstanding the pressures which society and his selfish interest may place upon him. The profession requires a strong tradition behind the code of ethics that governs the conduct of its members. An element of the chicken and the egg question arises. Which comes first? Is a strong tradition necessary to enforce a code? Or is the code enforced to establish a tradition? This question is germane to the present discussion, for some current standards and traditions need alteration.

Conditions of Work

The conditions surrounding teaching should be such that able young persons in large numbers are attracted to it as a lifetime career—otherwise the public cannot properly be served. A particular occupation merits the designation of *profession* when three conditions prevail: when that occupation is fundamentally important to society and society recognizes this; when a high degree of skill, knowledge, wisdom—trained intelligence—is required in the performance of the duties of the occupation; and when the way of life which surrounds the practitioners of that occupation are clearly advantageous, which means the degree of freedom and independence possessed by the practitioner in the practice of his profession and the degree of economic reward he receives. This latter is crucial for it is both an indication of the importance society attaches to the profession, and suggestive of the freedom and opportunity of the practitioner to lead a life that is advantageous to himself and to his family.

Teaching meets the standard of the first half of the first of these three

conditions. The public considers teaching to be of fundamental importance, even though they may not always treat teachers, according to the second half of the first requisite, as if this were the case.

The second requisite, the necessity for a high degree of skill and trained intelligence, poses the most serious question being raised today. Here lies the greatest opportunity for accepting professional responsibility to move education forward. While we maintain that teaching requires a high degree of training and skill, we often contradict this both in the organization and the conduct of schools.

Differentiated Responsibilities and Full Use of Talent

Substantial changes in the organization and conduct of schools must be made by the profession if the fullest use is to be made of the talents of those who enter upon a career of teaching. As matters now stand, the differences in responsibility and demand placed upon the poorly prepared as contrasted with the highly qualified teacher, between the beginning teacher and the veteran of twenty years are scarcely noticeable. The classroom and school schedule are so organized that a person with only minimum or substandard level of competence can "get by." In high school, for example, a teacher is placed with one group of youngsters for a relatively short period of time each day; he is in charge of relatively small groups of pupils each period; and he has an assigned textbook, a prescribed curriculum, and a commonly acceptable routine of assignment, study, recitation, which he follows to a large extent. With five or six of these brief interludes placed one after another each day for each of the five days of the week, little imaginative learning can be or is expected of teachers or pupils. The conditions are so burdensome and limiting, both for pupils and teachers, that the high degree of skill, knowledge, and wisdom which really effective teaching makes possible are not required, expected, or possible. That a surprisingly large number of high school teachers go far beyond these confining limits is a tribute to their ingenuity and devotion. But typical conditions discourage the long-term healthy growth of the profession.

These conditions of teaching must be so altered that only highly qualified persons, both in subject matter and methodology, can perform acceptably. Promising beginnings may be seen: for example, situations where large class groups are brought together to share the talents of a highly qualified teacher; where TV instruction is directed to large numbers; where the teacher instructs for only a limited number of periods per week, with substantial periods of time to prepare, and where his task is shared by other specialists and by assistants. The testimony of teachers who are participating in these experimental ventures is that, although more demanding, such teaching is also more satisfying and more productive for

the learning of pupils. If a teacher is able to teach more to larger numbers of pupils—which would represent a major breakthrough in efficiency—then the avenue to substantial increases in financial compensation may be opened.

In this context emerges another condition, namely, that a teacher perform only professional tasks, with other aspects being handled by those less highly trained, working under the direction of the teacher. Teaching is becoming rationalized into a team operation. Specialists of equal level, but of different kinds of competence work together (horizontal teams) and persons with different levels of training and competence, such as assistants, aids, and clerks, help fully trained teachers (vertical teams). Under these conditions the teacher begins to gain control of the conditions of learning. A further advantage of this shift toward team work is the built-in supervision and enforcement of standards. Teachers are automatically thrown into observing one another. This leads to evaluation and suggestion, as well as providing a most powerful stimulus, the desire to do well in the eyes of one's colleagues. This has not, heretofore, been a typical condition of teaching. Rather each teacher has been inclined to retire behind the shelter of his own classroom.

New Conditions Warrant New Licensing Procedures

If the educational profession is to move forward along the lines indicated, with teams, both horizontal and vertical, working together to provide the best conditions for learning, then a much more clearly defined and more highly differentiated structure of roles is called for. This then needs to be reflected in the training, the licensing, and the compensation arrangements for those who work in the profession.

A General License to Practice

While all professions hold much in common, such as the three conditions enumerated above, they vary in the kind and amount of training required, in the system for enforcing high standards, and in the licensing system. The different professions properly learn from each other, but should not try to follow each other in all details and traditions, some of which inevitably become outworn and in need of discard.

For example, the fact that most other professions issue only one basic license to practice does not automatically mean that education should follow suit. When a practice such as this one becomes well-nigh universal education might well examine its own traditions, as indeed it now is. Argument proceeds heatedly, while the trend toward fewer credentials accelerates. Whether the point will be reached where a person may become licensed to teach, without reference to what (subject) or to whom (the grade level) remains to be seen. While logic may ultimately move us in

this direction, much higher minimum standards for entry to the profession will be required before this kind of general license will be comfortable, and much stronger and more well-defined controls within and by the profession will need to be exercised. In some professions the basic license may technically permit a person to practice in any specialized part of the profession, but practically speaking a person does not practice in this limited field until his own professional group has indicated that he is qualified to do so. This appears to be largely true in the field of medicine, for example. Similarly, education may reach the point of having the state grant a basic license to teach, indicating the specialized field of knowledge a person has been trained in, and beyond that leave the issuance of additional credentials, such as those now granted for administration, supervision of the special subjects, counseling, and the like, to the profession itself.

Licensing Other Professional Workers in Schools

Professional workers from other fields, such as social workers, psychologists, nurses, physicians, librarians, dentists often assist with education in the school setting. Should a special license issued by the state be required of them? Some schools and states have such requirements. We find no compelling reason to require other than the basic license for their own profession. If their own professional association, or educational branch, sets specialized requirements and issues appropriate certificates, then any school district may require such certificates. It is not a proper function of the state.

This position conflicts most sharply today in the case of administrative and supervisory credentials now issued by most states. As professional associations become stronger they are insisting upon higher standards, as may be noted in the recent action of the American Association of School Administrators. The earning of an advanced degree in an accredited institution and the meeting of professional association requirements as a means for ensuring special competence beyond the minimum level for teaching is probably a sound direction in which we seem to be moving.

What of Substandard Training?

Should persons with less than full training be licensed? It is now almost universal practice. However, we incline strongly to the view that neither the state nor the profession should issue licenses, even of a temporary nature, to persons who are substandard in their qualifications. Responsibility for employing and paying such persons should rest solely with the local schools, with no state or federal funds being apportioned for persons in this category who are assigned the role of teacher. Accreditation should be granted only to those schools who do not abuse this practice.

Next Steps

What are the required next steps in moving in the desired direction of full professional responsibility—which we prefer to the phrase professional autonomy—? National, state, and local associations of teachers must take even more active part in setting the goals and maintaining standards, in joining forces with other groups, such as accrediting agencies, training institutions, and state departments of education. A united progressive front needs to be presented to the public in a manner that demonstrates to all that the organization of the teaching profession is not mainly, or even primarily, a trade union whose major function is to protect the private and personal interests of the practitioner, but rather an association for assuring that the highest professional ideals of service are enforced and extended.

R. N. B.

EDUCATION IN 1959—A COMMENT

". . . Although statistics and finances sometimes are passed off as the core of the education story, the crux of the problem in 1959 and the question mark of the future are more basic. This year drove home the new historic truth: Education, instead of being a cultural nicety, has become the cutting edge of civilization. The self-satisfied quest for 'education for leisure,' which reflected an American of unchallenged military and economic superiority, has given way to the search for 'education for survival.' The pursuit of happiness in school and college was beginning to be overshadowed by the pursuit of excellence. There were few reports in 1959 about high school youngsters ostracized for being 'brains.' . . .

"The end of the year leaves the American education scene in the midst of the search for new means toward achieving an old ideal. The new means must, as Dr. Conant points out in his scond book, 'The Child, the Parent, and the State,' find a workable compromise between the isolationism of the individual child's desires and the dictatorship of the anti-individualistic state. The old ideal is the open road of educational opportunity. Most efforts and experiments in 1959 tried to prove that freedom and excellence, quantity and quality, can be allies in the battle for survival."

Fred M. Hechinger, Education Editor, New York Times,
in New York Times, December 27, 1959

MATHEMATICS COMES OF AGE IN CALIFORNIA HIGH SCHOOLS

BY FRANK B. LINDSAY*

Many teachers of mathematics in California's high schools have introduced new content into familiar courses during recent years and have been experimenting with varied sequences of topics. Some have begun to use materials prepared by the School Mathematics Study Group; others have employed the approach proposed by the University of Illinois Committee on School Mathematics. The "Program for College Preparatory Mathematics," a report of the Commission on Mathematics of the College Entrance Examination Board, issued in summer, 1959, has also received serious attention. The impact of these various programs upon instruction in high school mathematics has been beneficial in the main but exposure to the several seemingly different and apparently competing schools of thinking about high school mathematics has sometimes produced more confusion than reassurance to teachers earnestly seeking to learn how to make their teaching effective.

In a desire to assist teachers to resolve their confusion and to achieve a sense of confidence in their instruction, the Bureau of Secondary Education of the California State Department of Education invited leaders among the several centers at colleges and universities across the nation to sit down together and to discuss their recommendations for content and sequence in high school mathematics. In order to insure that the participants would address themselves to the major problems in the organization of courses in mathematics for high schools, each was requested to examine in advance the "Program for College Preparatory Mathematics" before he arrived at the meeting and to be prepared to state (1) with which recommendations

* Chief, Bureau of Secondary Education, State Department of Education, Sacramento 14, California.

he found himself substantially in agreement, (2) with which he disagreed, and (3) the basis for his disagreement.

Although a few could not arrange to meet at a time convenient for the majority of their colleagues, a satisfactorily representative group was secured. Fortunately E. G. Begle of Yale and Howard F. Fehr of Teachers College Columbia were on hand to present the proposals of the School Mathematics Study Group and the CEEB Commission on Mathematics respectively. Max Beberman requested that the UICSM viewpoint be explained by H. Stewart Moredock of Sacramento State College who had worked a year at that center. William H. Meyer contributed the long-time experience of the department of mathematics at the University of Chicago in the development of a modern and basic course for general education. Professor Meyer also agreed to serve as moderator and conducted the discussion sessions with his usual competence.

The Bureau of Secondary Education is indebted to Paul J. Kelly, Chairman, Department of Mathematics, and to Professor Lewis F. Walton, University of California at Santa Barbara, for their assistance in securing not only Professor Meyer but also R. L. Wilder, Research Professor of Mathematics, University of Michigan, and President of the American Mathematical Society in 1955 and 1956, as well as Karl Menger, Illinois Institute of Technology, whose analysis of problems in the teaching of mathematics is treated in his booklet, "The Basic Concepts of Mathematics." Professor Wilder's viewpoint may be discerned in two quotations from his paper on "Axiomatics and the Development of Creative Talent."[1]

> "I am convinced," stated Dr. Wilder, "that one of our greatest errors in the United States educational system has been to underestimate the ability of the young student to *think abstractly.*"

And in connection with an account of an undergraduate course, he continued:

> "This course has, incidentally, revealed that students who do not do well on their placement examinations are not necessarily laggards, weak-minded, or susceptible of any of the other easy explanations, but that they often are intelligent, capable persons who have been antagonized by traditional drill methods."

The universities in California responded to the Bureau's invitation and were represented by Harold M. Bacon of Stanford University, Paul H. Daus of University of California at Los Angeles, John L. Kelly, Chairman, Department of Mathematics, University of California, Berkeley, and David Merriell at Santa Barbara in addition to Paul J. Kelly and Lewis F. Walton.

[1] Professor Wilder has given permission to quote from this paper which appeared in a book entitled "The Axiomatic Method" edited by L. Henkin, P. Suppes, and A. Tarski, published by the North-Holland Publishing Co., Amsterdam, 1959.

Who Should Study Mathematics in High School?

There was general agreement that a majority of high school students possess more capability to master the fundamental and unifying ideas of elementary mathematics than they or their teachers commonly realize. Karl Menger noted that the fundamental operations of arithmetic usually have been explored by pupils through the first six grades of elementary school and that in grades seven and eight boredom often sets in because the lessons are essentially repetition and not new discovery. It was E. G. Begle's conviction that the average student can learn and perform well in mathematics if he is allowed to advance at a slower pace and is provided with less sophisticated presentations than the very capable learner. Howard F. Fehr urged that teachers divide the students in a class into sub-groups as elementary teachers do with reading. He felt that the pace of learning, the examples provided, and a more intuitive approach should characterize instruction in one part of a two-track program. Fehr remarked that the CEEB Commission on Mathematics did not emphasize drill in its report because too many teachers can drill students but do not know just what they are really drilling about and for!

Begle pointed out that formerly mathematical skills could be taught with confidence that they would remain stable for a generation. Now so rapid is technological change that the basic underlying ideas must be taught so that a foundation is laid by which to renew "rusty" skills in quick refresher courses or upon which completely new skills can be built as required. Nor are mathematical skills needed today only by the physical scientist or engineer; the biologist and social scientist are utilizing mathematics more and more as is the businessman; this was stressed by R. L. Wilder. He noted that any attempt to separate applied and practical mathematics from pure mathematics was unsound since the applied mathematics of one time may shortly become the point of departure into new realms of mathematical knowledge and discovery, or vice versa. For these reasons emphasis upon appreciation of mathematical patterns and structure is well justified. The nine-point program of the CEEB Commission on Mathematics has applicability for all students, not solely for the "college capable."

Some Aspects of a Unified Sequence in High School Mathematics

Due to the rising enrollments ahead, colleges and universities can no longer afford to teach high school mathematics. High schools then must assume responsibility to teach all pre-calculus mathematics. In this undertaking they must have the assistance of mathematicians in assessing which topics in algebra, geometry, and trigonometry should be retained and

which eliminated, as well as how much analytic geometry should move down into high school courses. Much experimentation still remains to be done to determine the necessary content. High schools will find much help in designing experimental courses in the materials produced by the CEEB Commission on Mathematics, the School Mathematics Study Group, and the University of Illinois Committee on School Mathematics.

There is no disposition to de-emphasize the place of geometry in high school mathematics since geometric patterns of thought are quite as important as algebraic; both are related and frequently are intertwined. It should be realized, however, that a student today has analytic tools not available to Euclid. As a separate course solid geometry should disappear from the curriculum by integration of ruler-and-compass constructions and mensuration of areas and solids into junior high school courses and certain theorems retained as specific units with plane geometry. In like manner trigonometry should be merged into geometry and algebra with much less attention to numerical and logarithmic solutions of triangles.

It is important to understand that reduction in the number of formal proofs does not mean discard of other theorems of relationship. It is a change of viewpoint and approach which is involved. Instead of formal statement of a theorem, a situation is stated and the student is encouraged to discover the theorem with available tools for himself. In fairness to Euclid it should be said that he did not compile his geometry to be used as a textbook; with the rediscovery of Greek by the scholars of the Renaissance his work was used as a medium for learning both a classical language and an introduction to mathematical thinking. Euclid is not to be blamed for defects of his axioms and postulates; it is teachers who have remained ignorant of discoveries by mathematicians of the past hundred and fifty years and slavishly adhered to incorrect assumptions and an outmoded approach who are blameworthy.

How May Teachers Learn the Mathematics Needed to be Taught?

Colleges and universities must assume more responsibility for the preparation of teachers to acquaint them with the concepts essential to be taught. As John L. Kelly of Berkeley pointed out the courses which can best serve high school teachers may not be those of the sequences which lead to advanced degrees. There should be serious study of modern algebra and geometry at the post-calculus level as well as logic, set theory, probability, and statistics. To stimulate recruiting, the intern program now in effect at University of California, Berkeley, and at some other colleges, with reduction of courses in education to an essential minimum and continuation of post-graduate study in mathematics while teaching, might well become a model.

While teachers in service who have had thorough undergraduate train-

ing in mathematics can profit from the summer institutes sponsored by the National Science Foundation, teachers less well prepared may only be confused by study of advanced topics in the field. A major effort should be made to update the average teacher by teaching them high school content in revised form and at a higher level. H. Stewart Moredock stressed that such courses should show many concrete applications to the situations found in high school teaching. Howard F. Fehr summarized the objective of such training to be the presentation of algebra and geometry from an advanced overview. Such an effort has been made by Professor Paul Rosenbloom at the University of Minnesota in recent years. Fehr cautioned that teachers must not identify the reformation of the high school curriculum with formalization of mathematics. William H. Meyer also recommended that the connections of algebra and geometry, and of graphical calculation of maxima and minima, with physics and even the social sciences be made explicit to teachers undergoing retraining.

In summary, to introduce the radical changes in high school mathematics which the times and national survival require, there must be wholesale and organized re-training of teachers now in service. In New York it was reported that the State Legislature has appropriated a half million dollars to subsidize programs for upgrading high school teachers at qualified higher institutions. The school districts support the program and persons lacking a major in mathematics do not obtain tenure until they have rectified their deficiencies. It was suggested that California might wish to do as much. The dozen invited mathematicians urged the Bureau of Secondary Education to plan to hold regular meetings between mathematicians, high school teachers of mathematics, and curriculum directors to encourage faculty committees to study the report of the Commission on Mathematics, the materials of the School Mathematics Study Group, the University of Illinois Committee, and others. It will take the continued cooperation of all groups concerned to develop courses best adapted to the needs of high school boys and girls in California.

NEW ROLE FOR WRITING

"Reading maketh a full man, conference a ready man, and writing an exact man—"
—Francis Bacon

All signs now point to a heavier emphasis on writing and composition in secondary-school English classes. More time for practice in the skills and art of clear, concise, and well-organized writing is coming. This is not to say that high-school students are to become proficient writers but merely that more stress on the discipline of communicating ideas through writing will occur.

—*NASSP Spotlight*, November–December 1959

THE "PROBING-PEN" TECHNIQUE TO EVALUATE THE TEACHING-LEARNING SITUATION IN THE CLASSROOM

BY MELVIN E. LEVISON*

When we try to evaluate our teaching-learning situations by the standard techniques, we often fall into the same difficulty as those who would formulate opinions about student popularity solely from classroom observations. The sociogram corrects misconceptions in the latter case. In the former, the typical types of scholastic tests too often scratch only the surface. This article suggests the "probing-pen" technique as an "offbeat" way to evaluate another deceptively evasive aspect of the teaching-learning situation: How our students really evaluate us and our courses. Such knowledge can, of course, improve the entire educational process.

Once the term is well under way and things are functioning quite normally, ask the class during the last fifteen minutes of any period to jot down what they think of your course and of you as a teacher. You may help them by specifying what they might note in their evaluations. This latter suggestion is particularly applicable if the class is normal or below. Or you might pass out a mimeographed check-list with columns for "excellent," "good," "fair," "poor," "very poor." This affords protection to those who may fear that you might notice handwriting. A possible shortcoming here, though, is a lack of spontaneity.

For a bright class you might, for the first time, give no instructions. If the results are not good, next time specify what you would like them to consider. At the very beginning indicate that no one is to sign his name to his paper; that once read the paper will be thrown away. The class will relish this task . . . provided they trust you.

Of course, if you have a nice healthy ego, you may go one step further.

* Assistant Professor of Education, Brooklyn College, Brooklyn, New York.

Start the enterprise a bit earlier in the period; give the class the above instructions; then tell them you will read all of the papers to the class. Believe me, you will not waste your time if you spend the whole period on this activity. Before indicating what you may learn, let me suggest one other elaboration. If you have met the parents and have respect for their judgment, you might announce a day in advance that tomorrow will be "probing-pen" day. You may *urge* them to talk over with their parents the work in your class. You may structure or leave unstructured their preparation for the morrow.

And what will you learn? You may discover from one and the same set of papers that you are fair-unfair; exciting-boring; giving enough work-not giving enough work; playing favorites-not playing favorites; spending too much time on a unit-not spending enough time on a unit; going off on tangents-not going off on tangents; too literal-minded-too prone toward symbolism.

However you do not stop once you have read the papers aloud. Then you become a "front-bencher" in parliament and rise to defend your position. If you are wise, when you have been wrong, admit it and mend your ways. My students have pulled me out of more than one rut. But you don't yield to every suggestion! At times—and those times may be many—you must persist. You will win the understanding of your class if they see that you have been meeting their criticisms on a man-to-man basis and acceding where you might justly do so.

Mind you, this *is* a teaching-learning situation. It is almost an orthodox developmental lesson! You are still the teacher and not just a nice guy. You take the activity seriously; and after the novelty wears off, the class will take it in the same vein. Even from the beginning you will see that there are no rude or excessive statements in the letters. The class will be attentive, though not inhibited, during these deliberations. On each occasion the technique will produce a fresh and refreshing experience.

But be careful. Do *not* use the "probing-pen" technique at regular intervals . . . and don't overwork it. Choose the right psychological moment. You can "feel" the right time. Or the students will suggest the moment. Be sure to limit all criticism to you and your subject, that is, if you want to remain on speaking terms with your colleagues. As time goes by, if your students respect you, more than a few will sign their letters. Thereafter they will make their evaluations orally and at the appropiate time. Incidentally, when you finish reading the letters aloud to the class, you ostentatiously drop them into the wastebasket . . . where they stay. Your students will also understand that even if you do find out, it would be beneath your dignity to punish the writer or to harbor any animosity toward him. Sometimes it is fun to guess who wrote which letter!

It should be obvious that this "probing-pen" technique does much more than serve as a means to evaluate the teaching-learning situation. If it does nothing else, it breaks the boredom. For no matter how interesting one's lessons may be, after a while there is need for a change. It gives the students an opportunity to participate in a mature activity, one that requires their utmost deliberations. And of course the teacher would be quite justified in pointing up *class* deficiencies during these sessions. It is likely that such criticisms will be accepted in quite a different vein since the *quid pro quo* spirit is so inherent in the technique. Lastly, this whole activity has a far-reaching cathartic effect. For no matter how brilliant and empathetic a teacher one may be, frictions do develop, even build up. The wholesome give and take in this form of activity tends to clear the air.

There may be those who wonder what happens to the teacher's authority and dignity during and after the evaluation. Naturally if you are inclined to be authoritarian, you are in for a beating; you might even lose control of the situation. You won't try it anyway! But if you are big enough to realize that you can be wrong, even very wrong and in more than one matter, though the students as you tell them to write their letters may sound like a wolf pack about to make a kill, their letters will surprise you by their moderation and good sense. As for your dignity, it will be *enhanced,* not diminished.

I doubt that anything need be said about the democratic implications of this undertaking. It is for this reason that I think it will appeal to many readers. Try the "probing-pen" technique once; likely you'll add it to your repertoire.

GASOLINE AND LEARNING – DO THEY MIX?

What is the relationship between car ownership by high school youths and their grade records? Without necessarily implying a cause-and-effect relationship, various studies have shown a high incidence of low achievement among students with cars of their own.

William Condit, a Los Angeles high school principal, for example, has disclosed that none of his straight A students and only 15 per cent of his B students own cars. Among his C students, 41 per cent own cars, and among D students, 71 per cent. Of the students failing, Mr. Condit noted car ownership by 83 per cent.

A study of the degree to which car ownership and low grades are both symptomatic of more basic difficulties, and the degree to which ownership contributes to or causes low grades, may be needed.

—*Guidance Newsletter,* September 1959

WHAT'S HAPPENING IN CALIFORNIA SECONDARY SCHOOLS

BY WILLIAM N. McGOWAN*

South High School, Bakersfield, conducted a very successful "Public Relations Day" for legislators and representatives of the press, radio and television. The affair, designed to become an annual activity, was provided to give legislators and public information practitioners a close-range look at a modern high school in operation. The invitation was for a regular school day and indicated that visitors were free to visit any classes of their choice, without prearrangement, talk to any students or members of the staff. A quote from one of the newspapermen who devoted the whole of his special column for one issue to the visitation expresses how successful the idea was. The event was well covered in pictures as well as special and regular news items.

"Dr. Jensen has a reputation for running a 'tight ship,' but a good one. He has discipline in his classes, attention, and yet there was no evidence of the students being browbeaten or coerced. The classes I visited were happy, controlled, and the responses I heard were intelligent.

"I noted in one French class I visited that the students were actually using employable French phrases and sentences. They were learning to talk French by speaking it . . .

"At South High they are starting new teaching techniques in a language laboratory, and at this incipient stage I should say they are going places . . .

"Another notable piece of academic work at South High, which came to the attention of the visitors this week, was the careful counseling policy. Only about 50 per cent of students these days plan to go on to college, and the other 50 per cent will go into other trades and other occupations not dependent upon academic degrees. The value of good counseling be-

* Executive Secretary, California Association of Secondary School Administrators.

comes apparent. The faculty of South High directs no inconsiderable attention to this phase of academic obligation.

"A common and oft reiterated criticism of the schools these days is that they offer too many 'frills,' marginal froth, irrelevant and silly courses; but during my visit I noted a basic consideration of the fundamental teaching which most of us beyond forty regard as necessary in any kind of education. . . ."

On Tuesday, November 17, students of the new *Del Valle High School in Walnut Creek* received report cards tabulated and prepared on the county's IBM data-processing equipment.

Issuance of the report cards—and later permanent record posting by the same process—is the culmination of the combined efforts of staff members of the Acalanes Union High School District, the county IBM installation, and the County Superintendent of Schools. The pilot program, which is one part of a complete student accounting program currently being established by the County Superintendent's staff, operates as follows:

A Master Code is designed for each of the courses offered in the school, and from this code students prepare a Subject Card which lists their seven classes of the day. The IBM Department uses this card to prepare IBM cards on which teachers mark-sense (mark the card for the machine to read) the scholarship and citizenship grade for each student. IBM machines translate the mark-sensed marks, together with the course description and teacher's name—and other pertinent data usually entered by teachers or clerical staff—and print the completed report card. Del Valle handed out the completed report cards the last period of the day, with no lost time in the school program.

The card is designed so that parents can keep the report card and return a receipt to the school. For the second and subsequent quarters, a new report card, containing cumulative marks, will be prepared. The card can also be prepared for mailing directly to the parent. The data already entered in the IBM cards will be used to print permanent record gummed stickers.

Participants in this joint effort feel that the IBM report-card procedure has many advantages over the traditional manual system. These advantages can be summarized: (1) No time is lost in the school program, adding the equivalent of four teaching days to the instructional year. (2) Teachers and office staff are relieved of time-consuming routine clerical duties. (3) Increased neatness and legibility of forms result. (4) Less chance exists for errors in transcribing data. (5) There is less opportunity for students to change grades. (6) Students are discouraged from "pressuring" teachers to change grades. (7) Once the IBM cards have been punched, any combination and form of miscellaneous reports—honor lists,

grade percentages, daily class schedules, etc.—can be prepared for school use.

The report-card procedure described above is part of a student accounting "package" currently being designed for possible use by the county's high schools. Other parts of the "package" include: pre-registration, registration and programing, absentee accounting, and test analyses and student achievement profiles.

Galileo High School was recently the scene of San Francisco's 1959 "Youth Town Meeting."

Three hundred high school students participated in eight discussion groups whose unifying aim was the preparation of material for the 1960 White House Conference. The youth counterpart of the conference held earlier this year at the University of San Francisco discussed current problems. The conference was sponsored by the San Francisco Youth Association and the Town Meeting Committee appointed by Mayor George Christopher. The meeting was one of many similar gatherings being held throughout the nation in preparation for the fifth White House Conference on Children and Youth. Many students from the SFUSD joined with representatives of private and parochial schools in preparation of San Francisco's youth viewpoint.

The Valley Council of the Future Engineers of America, with support from Valley industries, has established a Science Club Center at *Birmingham High School.* The *Los Angeles City Board of Education* assisted by rehabilitating one of the bungalows for their use. Students work on projects in the different laboratories or attend special classes conducted by engineers from Valley industries. Some of the projects under way are: telemetering, tracking solar furnace, analog-computer, crossbar switching system, and other projects in physics, chemistry, and biology.

The Center is open Monday through Thursday evenings and Saturday afternoons.

Dedication of *Mayfair High School,* the Bellflower Unified School District's new 2.5 million dollar facility in Lakewood, was held November 8 with more than 1,000 community leaders, parents, and students in attendance.

Keynote speaker at the ceremonies was Dr. C. C. Trillingham.

Hailed nationally as one of the first high schools constructed to implement the "school-within-a-school" concept of student-body organization, Mayfair has been spotlighted since the planning stage when architects'

drawings were cited by a jury representing architects and the American Association of School Administrators as "an outstanding illustration of latest developments in high school planning." More recently, the school has been the subject of articles in *School Management* and *Newsweek* magazines.

The Mayfair pattern calls for the two sub-schools to enroll students heterogeneously from all four grade levels. Each "school" occupies separate buildings for required subjects, has its own faculty, and is administered by an assistant principal. Sub-school student bodies join for elective subjects and extracurricular activities.

According to Dr. Wampler, this pattern is designed to promote the desirable close relationship between students and faculty found in small schools, while providing the specialized facilities and operating economies of large high schools. Decentralization of faculty supervision is a further advantage.

Mayfair's initial project has a capacity of 1,141 students. Located on a 44-acre campus, it contains 93,260 square feet divided between eleven classroom buildings, a main administration building and two sub-administration units, two shop buildings, a gymnasium, and locker and shower rooms.

The second increment of construction is expected to get under way in early December, according to Bellflower officials. The 24,822 square foot new project will cost an estimated $591,350 including three classrooms, a library, a multi-purpose building, and additional locker and shower rooms. Completion of the project will increase the school's student capacity to 1,408 and provide special facilities called for in the master plan, officials note.

The master plan also contains a third sub-school to be constructed as the need dictates.

Mayfair was organized last year in afternoon sessions at Bellflower High School and moved to the new campus at the opening of the current school year. Principal Richard Oswald heads the 40-teacher faculty and student body of 866. Assistant principals assigned to administer the sub-schools are Richard Robinson and Jack Thompson.

Santa Monica High School has extended its interests in work experience to include an active placement service for all students desiring part-time work. A half-time secretary handles mechanical details of the program—sign-up by students, recording of jobs phoned in to the school by prospective employers, etc. This secretary, paid by the Board of Education, also works from the Board office in the District Work Experience Program. Experience with the program has been good.

SYMPOSIUM

NEW DESIGNS FOR THE SECONDARY SCHOOL SCHEDULE

DWIGHT W. ALLEN AND ROBERT B. MOORE, COORDINATORS

The *Journal* is pleased to present this month a symposium on one of the most widely discussed developments in secondary education, the introduction of a greater degree of flexibility into the schedule of the American high school. Rather than presenting a theoretical discussion, the coordinators have brought together a number of brief reports from the field of how schedules are being modified. We are grateful to the two coordinators, Dwight W. Allen, Research Associate and Lecturer in the experimental Secondary Education Project at Stanford University, and Robert B. Moore, Associate Director of the Commission on the Experimental Study of the Utilization of the Staff in the Secondary School, who have written the introductory article and organized the symposium.

They will present a companion symposium in the *Journal* in April entitled: "The Constructive Use of Teachers' Talents." This, together with the present symposium, will constitute a comprehensive report on some of the newer developments under way in improving conditions for learning in secondary education.

NOTHING VENTURED, NOTHING GAINED

BY DWIGHT W. ALLEN* AND ROBERT B. MOORE**

After the 1906 earthquake in San Francisco the major portion of the downtown part of the city was completely destroyed. City planners got together to map out what the new San Francisco would look like. Much sentiment was expressed that the hodgepodge system of streets coming in

* Research Associate and Lecturer, Stanford University, California.

** Associate Director of Commission on Experimental Study of Utilization of the Staff in the Secondary School.

at all different angles, particularly on the north side of Market Street ought to be remedied. This was agreed to. However, because of the interests of a very few property owners whose buildings remained intact the city was literally compelled to rebuild in the same hodgepodge manner which had characterized the pre-earthquake pattern.

Today we are in the midst of re-examining the entire school program. We are considering ways in which we might better build high school programs to prepare students to the fullest extent of their capabilities, and to the fullest extent of our knowledge. But, as school planners, we have been rather unwilling to begin really from the ground up.

The schedule remains, by and large, immobile and unbending. Improvements in the instructional program have been forced to conform—to be distorted as necessary to fit traditional schedule patterns.

There is now substantial evidence that the schedule pattern itself must be challenged.

The inertia of scheduling tradition is holding back the frontiers of educational advance. Too often proposed instructional modifications meet the response, "it won't fit into the schedule." And the issue dies here without receiving a trial.

Schedule modifications need not be an all-or-nothing proposition. Varying degrees of modification are possible. Even the rather rigid time requirements of the Carnegie unit can be met and still allow for a wide range of experimentation with the school schedule. Certainly accreditation need not be jeopardized. The articles in this symposium illustrate that schedule modification is considered a part of curriculum improvement.

The symposium is not a theoretical discussion but rather a résumé of ongoing programs which have modified scheduling. Experimentation requires much effort. It is easier to stay on the traveled road. We particularly appreciate the fact that not only have these administrators been building a new road, but that while huffing and puffing over rugged terrain they have taken time to share their practical experience. Schedule experimentation and modification have not been limited to large schools or small schools, to rural schools, suburban schools, or urban schools, to new schools or well-established schools. Schedule modification should never be undertaken unless the demands of the instructional program warrant. The articles included in this symposium suggest schedule modifications which met instructional needs.

There are many different roads to schedule modification. In some school districts the schedule had to be modified if the current school plant were to house the increased number of students. In other instances the schedule was modified because of a desire for lengthened or shortened periods. Some schools have modified their schedule to enable students to increase the number of courses they might take during the year. Several

districts have found that the talents of the faculty can be better utilized through large-group instruction and team teaching, which are difficult under current schedule limitations. The schedule has been modified to permit classes to meet more or less frequently. There is no real need for classes to meet every day or at the same time every day or for the same length of time for each class meeting.

Some of the reasons for modifying the schedule have been enumerated, but the most important question remains. What is it that is important enough to cause an administrator to want to leave the relative comfort of a well-established schedule? The one compelling reason for the conscientious administrator is his conviction that modification of the schedule will increase the efficiency of learning. The present traditional schedule imposes arbitrary time barriers. Different techniques of teaching require different lengths of time. Some techniques are as effective for large groups of students as for small groups of students. Longer periods are required because of the time demanded for preparation and clean-up routines in such subjects as home economics, physical education, mechanical drawing and others. Principals are often too concerned with their teacher-pupil ratio. There are not enough good teachers available. And, even the best teachers are not equally qualified for all of the tasks required in the teaching-learning process. This leads to new concepts of the role of the teacher, of the teacher-pupil ratio, of teacher load, and, of the time required for highly professional class preparation. It also leads to a changing concept of the role of the administrator. He must examine the talent of each teacher closely to match it with the requirements of each specific teaching task. Even though schedule modification is not a goal in itself, sometimes all that stands in the way of instructional improvement is the schedule. Administrators and teachers have grown so accustomed to the schedule as an immutable framework in which they must work that a change in the schedule itself often never occurs to them. In reading the symposium articles remember that these schools started with a traditional schedule and have accomplished substantial modification with accompanying improvement in their educational results. There are many limitations, but we hope that the schedule will not become the bare, remaining framework of a teaching program long outmoded.

We have had an earthquake in secondary education, a cataclysm of enrollment and Sputniks; let us not make the same mistake as San Francisco.

FLEXIBLE CLASS SCHEDULES

BY J. LLOYD TRUMP*

Flexible scheduling is designed to make better use of professional competences of teachers and provide improved learning experiences for students. Time and space are changed as the purposes and content of instruction vary.

Schedules typically were more flexible in 1900. Schools were smaller then. Personnel relationships also were more informal. But these matters have changed in the twentieth century. Larger schools have resulted in more systematic arrangements for moving students and teachers from one place to another. The development of the Carnegie Unit for quantifying instruction has led to consistency in time allocations. The standards movement of the 1900's encouraged by state departments of education, accrediting associations, and higher educational institutions further contributed to making schedules quite rigid. Democratic ideas of administration were interpreted to require emphases on uniformity.

Several recent developments are fostering more flexible scheduling of students and teachers. Dissatisfaction with the Carnegie Unit as a measure of learning outcomes is increasing. Administrators of larger schools are considering ways of organizing them into smaller ones and otherwise bringing more personal relationships. Studies of staff utilization suggest the need for changes in grouping and time allotments. Recognition of individual differences opposes uniformity. Electronic devices make it easier to change scheduling practices.

Many persons now realize that present scheduling practices inhibit students from caring deeply about anything in the curriculum. At about the

* J. Lloyd Trump, formerly Professor of Education, University of Illinois, is Associate Secretary, National Association of Secondary School Principals, and Director, Commission on the Experimental Study of the Utilization of the Staff in the Secondary School, Washington, D.C.

time a student becomes interested, a bell rings and he must go to another, often quite unrelated, subject in which at the moment he has little interest. Moreover, there is less likelihood that a student will develop independent responsibility for learning when a rigid schedule makes so many decisions for him.

How may schedules be made more flexible? Some schools are organizing the school day into blocks or modules 15 to 30 minutes in length. For example, instead of the present six 55-minute periods, there would be eighteen 20-minute periods. Classes or time in laboratories, libraries, and the like, could involve two, three, five, or whatever number of modules was desired. Students would not all be in the corridors at the same time, passing from one class to another.

Another school seeks to achieve flexibility by scheduling classes for two hours one day, one the next, and two hours the third. All sorts of similar modifications are made.

The use of a "floating" period makes it possible for a student to have longer class periods for more subjects. Classes meet four days per week.

Still another school has added two periods in the day when larger-than-usual or smaller-than-usual groups can be assembled without disturbing other classes. One variation is to have no classes at all scheduled on Wednesdays. The schedule on those days permits field trips, longer amounts of time in laboratories and libraries, meetings of special groups, and other types of activities.

Scheduling similar sections of a given subject the same period permits team teaching with regroupings of students as needed. So does back-to-back scheduling involving two sections of students taking the same two subjects with the same two teachers (the figure *three* can be substituted for *two* for even greater flexibility).

More flexible than any of the foregoing is the schedule suggested on page 12 of this author's *Images of the Future.*[1] This schedule is based on reorganization of instruction and changed staffing patterns. Electronic scheduling is desirable for this adaptation, which permits greater variations in the use of time, space, and personnel. The schedule proposed is easier to manage because students are organized into groups only eighteen hours per week instead of the conventional twenty-five. Acceptance of the point of view that facilities should be used more hours and days per week would make scheduling even easier.

Flexible schedules can be designed when teachers and administrators are convinced that changes in the structure of education are desirable.

[1] *Images of the Future: A New Approach to the Secondary School,* pp. 15–21. Urbana, Illinois, 200 Gregory Hall: Commission on the Experimental Study of the Utilization of the Staff in the Secondary School.

THE TRANSFORMATION OF THE SACRED SECONDARY-SCHOOL SCHEDULE

BY ROBERT H. JOHNSON* AND M. DELBERT LOBB**

The typical secondary-school schedule today is like a hand-tooled piece of furniture. It shows careful planning and work; all joints are tight and well fitted; there is evidence of the polish and design which result from a pride in craftsmanship. The daily schedule is truly a work of art, and the secondary-school administrator an artisan. With precision he manipulates numbers of people through time and space, with the hope that learning will occur—and it does to a degree. His problem is that the typical schedule, however well articulated, will not do the job required of it in order to facilitate an educational program suitable for today, and most certainly not for the future. The situation is further complicated because educators have given much attention to insuring that each little square on the schedule is permitted to include only a certain number of pupils for a particular teacher at a definite time in a designated place. This has been the easy way to accomplish the worthy aim of controlling teacher load so it would not become unreasonable. It is unfortunate that to a great extent it has also limited the instructional program.

Hand in hand with this rigid compartmentalization of persons, places, and time, there has developed the isolation of the contribution of the individual teacher. Certainly much of the educational process must rest with the teacher working as an independent agent; but a great loss is suffered by students if there is no utilization of advantages of joint teaching, such as becomes possible with teaching teams. It is essential that those interested and involved in secondary education take a close look at these problems and seek solutions scientifically and creatively.

* Superintendent of Schools, Jefferson County Public Schools, Lakewood, Colorado.

** Director of Research, Jefferson County Public Schools, Lakewood, Colorado.

The Action of Jefferson County (Colorado) School District No. R-1

This school system has been participating in such research during the last three years. The three phases of the study project have been related to the utilization of the staff. Because of careful preparation and communication it has been possible to secure an experimental atmosphere, community understanding, and financial support. This investigation has been carried on with some assistance from the Ford Foundation and in cooperation with the Commission on the Experimental Study of the Utilization of the Staff in Secondary Schools.

During the first year a study was made of the effects of class size on achievement of pupils in several school subjects. It was determined that the size of class—whether ten, twenty, thirty-five, sixty, or seventy—did not in itself make any significant difference. In order to maintain a satisfactory pupil-teacher ratio, two persons were assigned to large groups. From the factors and findings of that phase and with the encouragement of the Commission and Dr. J. Lloyd Trump, it was decided to experiment with team teaching and schedule modification during the second year. Seven of the eight high schools in Jefferson County, Colorado, were involved in the team-teaching approach, with a total of approximately fifteen hundred students participating. Included were the subject areas of social studies, business education, English, and mathematics. Two of the high schools set up schedule modifications. One was an adaptation in physics for recitation, laboratory, testing, and other activities. The other was a modification called "The Golden Plan," which included the school subjects biology, physics, chemistry, algebra, trigonometry, English, journalism, foreign languages, industrial arts, and art. Eleven teachers and approximately 350 students participated. The results were favorable with regard to the achievement of pupils and the provision of better opportunities for varied pertinent learning experiences. One of the most gratifying results of the project was the justification of the confidence of the students, parents, and teachers. Since the constant changes and adaptations in the organization and procedures for classes did not adversely affect the educational development of the students, great impetus and encouragement for further research was given.

The small additional expense for clerical help in the research project was compensated by extra services such as the preparation of permanent materials, the saving of funds for substitutes, and the completion of special reports and work related to the experimental situation. It was also apparent that no concept of class size was justifiable without the consideration of function, purpose, and procedure. Groups of all sizes from two to 180 were equally effective, but for different learning situations.

The morale of students was high and they generally considered it advantageous to be in classes with teaching teams and modified schedules. There was substantial support for the study, which was sustained throughout the year. Even though there were differences between schools with regard to the experimental-mindedness of teaching personnel, in all cases the project was looked upon with some degree of favor. Great strides were made during the year in increasing the use of modern procedures and practices and in developing the capacity of teams and individuals to adjust to changing educational needs.

This year the investigation has been extended into a number of areas related to the improvement of instruction and the utilization of the staff. Attention is being given to schedule modification, symbiotic team teaching, interdisciplinary and intradisciplinary team teaching, team guidance, ungraded English, pupil placement, use of material and personnel resources, independent study by students, attitudes of pupils and teachers, and adaptability of teachers. Some of the related factors being examined are: appropriate activities for various-sized groups, outstanding techniques, increased individual pupil-teacher contacts, techniques of self-evaluation by pupils, conservation and reinvestment of professional time, plant and facility factors, and action research by teachers.

A View of Teaching Teams

Obviously a teaching team is a combination of persons assigned to the same group of students at the same time for instructional purposes. The rationale is that the total educational accomplishment of the team is greater than the "sum" of the teaching attainments which the teachers would reach in regular individual situations. Among other factors, for pupils this accomplishment relates to academic achievement, development of skills, and establishment of scholarly attitudes. For teachers, it includes increased proficiency, more professional maturity, and greater adaptability.

During the current school year the subject areas, English, social studies, mathematics, science, business education, and music are involved at one or more of the eight high schools in Jefferson County, Colorado. The typical team includes a teacher specialist, two general teachers, and an instructional assistant or clerk for a class of 100 to 125 pupils. However, each team differs somewhat from the others.

One small high school has set up unclassified English groups for about 270 students in grades 10, 11 and 12. The three grade levels are combined into classes which permit the use of procedures and activities adapted to the needs of the student, regardless of his classification. One teacher specialist, two general teachers, and one instructional assistant are assigned to these students as part of their teaching duties.

Another school has a team in sophomore English with one teacher spe-

cialist, two general teachers, one instructional assistant, a librarian, two students, and two community consultants. The team is assigned to three large groups of over 100 students each. This team is called symbiotic because it includes representatives from various groups who are working together. The two students are seniors who are members of Future Teachers of America and are interested in securing background information and experience. The community consultants are interested adult members of the school area who serve two functions: they provide a sounding board for the team and they assist in the area of obtaining material and personnel resources.

At another school there is an interdisciplinary team made up of a teacher specialist in English, a teacher specialist in social studies, and an instructional assistant. Tenth-grade pupils are scheduled in a two-period block for world history and English II; those in the eleventh grade have a two-period block for American history and English III. This involves close cooperation between the specialists so that the program can be integrated to a much greater degree than merely joint planning and so that each subject will retain an identity. It is especially applicable to a small school where one department is not large enough to constitute a team. Much variety of procedure and grouping is possible and the use of time is adjustable and efficient.

One school has a teacher specialist, a general teacher, and a clerk working with classes in world history and American history. The unique aspect of this situation is that several ninth-grade superior students have been selected for advanced placement in the world history class. The long-range objective will be to take these pupils through three high school social studies courses by the end of the junior year; during this time teachers will be assisting the students to develop independent study and research skills so that during their senior year they can pursue a selected and planned project in depth.

At another school there is a combination of two teams, one in social studies and another in guidance. The social studies group is a symbiotic team and is composed of one teacher specialist, five general teachers, one clerk, two students, and two community consultants. The guidance team includes two deans and one teacher specialist and serves as a coordinating committee for the guidance functions related to the tenth-grade students. The teacher specialist is the same person who is on the symbiotic team. This allows cooperative planning and implementing of time and procedures for group guidance. As shown in Table 1, the daily schedule is set up so that two large world history groups are scheduled at consecutive periods with a guidance period between them.

Examination of this table shows the many possibilities for adjusting groups and time allotments. For example, period 2, sections A, B, C and D

TABLE 1.—*Schedule for World History and Group Guidance*

Period	Sections										
2	A			B		C		D			
3	1	2	3	4	5	6	7	8	9	10	
4	E			F		G		H			

can meet in separate sessions of about 30, in a large group of 120 students or in other combinations which will serve a purpose. The same is true for period 4. Period 3 is only thirty minutes in length; during this time the students are normally divided into ten groups of about twenty-four pupils. Sometimes sections A, B, C, and D use period 2 and 3 for world history or guidance which permits an extra long period to accomplish appropriate aims. This can be done for sections E, F, G, and H with periods 3 and 4. In addition, it is possible to have all 240 students meet at the same time for a lecture or some other suitable presentation without disrupting the schedule.

A typical teaching team has been formed at another school with a teacher specialist and two general teachers in plane geometry. They have part-time services of a clerk. It is possible to have a group of 100 students together for introduction, explanation, review, audio-visual presentations, and certain other activities. The group can be subdivided in combinations for work which ranges from remedial help to advanced and independent work.

There is one other plane geometry team composed of two general teachers. They also have a small amount of clerical help. This team is interesting primarily because the two teachers are inexperienced. Advantages and disadvantages will no doubt become apparent during the year.

Students in Typing I and Typing II are being taught by a team which has a teacher specialist, a general teacher, and a clerk. The classes include about 75 students in a room which has been converted from two regular classrooms by the construction of a vision strip in the intervening wall. A sound system, overhead projector, and tape recording equipment provide flexibility in teaching. The use of the team varies from the occasions when three persons are giving individual help to students to those times when the class is performing under the direction of a tape recording and all three teachers are working in an adjacent business machines room. Students have been grouped according to skill and there is opportunity for providing work appropriate to the level of ability.

SCHEDULE MODIFICATION AND THE GOLDEN PLAN

Team teaching and schedule modification are not mutually exclusive in design or purpose. Both are aimed at increased efficiency in the utiliza-

tion of the staff. Each contains some aspects of the other. However, as the name implies, schedule modification is some kind of change in the timetable for the day or week which alters the usual procedure of having a group meet daily at the same time with the same teacher and room. The primary purpose is to adjust the length of time, size of group, and other environmental factors to the teaching-learning function.

At one high school in Jefferson County, Colorado, modifications have been set up in world history and physics. A teacher specialist and four general teachers are assigned to the world history classes. The specialist has five periods a day for this subject, one of the general teachers has three periods, one has two, and two teachers each have one period, as shown in Table 2.

TABLE 2—*Schedule of World History Teachers*

Period	Teachers		
1	Special, General 1, General 2, General 3		
2			
3	Special, General 1		
4	Special	General 2	General 4
5	Special		
6	Special, General 1		

The students are divided into twelve sections of about thirty each. The schedule of these sections is shown in Table 3. It allows the option of meeting by small sections or large groups.

TABLE 3—*Schedule of World History Sections*

Period	Plan 1 (Sections of 30)	Plan 2 (Large Group of 180)
1	A,B,C,D	(A,B,C,D,E,F)
2		
3	E,F	
4	G	
5	H,I,J,	
6	K,L	(G,H,I,J,K,L)

The change between plans is accommodated by study hall arrangements. For example, when Plan 2 is followed, section E has study hall during third period. The decision is made far enough ahead so that the study hall supervisor is aware of shifts in student personnel. Class rolls are provided for attendance check. This arrangement has created no real problem for teachers or pupils. In addition to the possibility of groups of thirty or 180 students, various grouping combinations are made in cases where

more than one section meet at the same period. Up to now about half of the time has been used for each plan with activities and procedures suited to the size of the group.

The general plan for the physics classes is quite similar to the one just described. A teacher specialist and a general teacher constitute the staff and there are five sections of students, as described in Table 4.

TABLE 4—*Schedule of Physics Sections*

Period	Plan 1	Plan 2
1	A	
2	B,C	(A,B,C,D,E)
3		
4		
5	D	
6	E	

This schedule also can be changed day by day. When students meet in the large group second period, those in sections A, D, and E interchange physics and study hall. Generally there are two large meetings each week for presentation, motivation, enrichment, and evaluation. The three small group meetings each week are used for laboratory work, recitation, discussion and other appropriate activities.

At another high school the schedule has been modified extensively. The Golden Plan takes its name from the school and from the promise it holds as a means of improving the utilization of the staff. Most of the faculty and students are participating in some phase of the program. The curriculum areas which are involved are science, mathematics, social studies, English, business education, music, art, homemaking, and industrial arts. Basically it is an interweaving of teacher-pupil schedules which incorporates flexibility. The schedules in some subjects have been changed completely so that at times large groups of pupils meet for certain activities and at other times small groups or individuals pursue appropriate activities. In other subjects there are double blocks of time which round out the schedule pattern. This modification can best be illustrated by several examples taken from the school schedule. The biology schedule is shown in Table 5. The total enrollment in this subject is approximately 160 students. The sections generally have about twenty pupils; however, in instances where double-size sections occur, two teachers are available. It is apparent that the biology specialist has ten preparation periods instead of the normal five. This does not mean that he has a subnormal teaching load, but rather that the students have been redeployed to take

TABLE 5—*Biology Schedule (Sections A,B,C,D,E,F,G)*

Period	Monday	Tuesday	Wednesday	Thursday	Friday
1		A	A	B	
2		B	A	B	
3		C	C	D	
4		D	C	D	
5	A,B,C,D,E,F	E	E	F	A,B,C,D,E,F
6		F	E	F	

advantage of special-sized groups and to use professional time in a better manner. Similar modifications have been set up in chemistry and physics.

Other changes in the schedule of this school include double blocks of time and special team organization. Some examples of the double periods are shown in Table 6.

TABLE 6—*Examples of Subjects with Double Blocks of Time*

Period	Monday	Tuesday	Wednesday	Thursday	Friday
1	Typing D	Typing C	Typing D	Typing C	Typing C
2	Typing D	Typing C	Typing D	Typing C	Typing D
3	Shop II	Shop I	Shop II	Shop I	Shop I
4	Shop II	Shop I	Shop II	Shop I	Shop II

Some student schedules are modified more than others, but generally speaking each student has some courses which are scheduled at the same time each day as in a regular schedule. The rest of his schedule may include a subject which is completely modified, some double-block subjects and team-teaching organization. A typical schedule can be seen in Table 7.

TABLE 7—*An Illustration of a Student's Schedule*

Period	Monday	Tuesday	Wednesday	Thursday	Friday
1	W. Hist.	W. Hist.	W. Hist.	W. Hist.	W. Hist.
2	Pl. Geom.	Pl. Geom.	Pl. Geom.	Pl. Geom.	Pl. Geom.
3	Shop II	Eng. II	Shop II	Eng. II	Eng. II
4	Shop II	Eng. II	Shop II	Eng. II	Shop II
5	Biology	Biology	Biology	Study	Biology
6	Study	Study	Biology	Study	Study

It is the intention of the faculty at this school to involve all teachers and students next year. This will permit more movement in the direction of the type of modification represented by the biology class.

Evaluations and Opinions

During the three phases of the research careful controls have been used in the experimental design. The following procedures for the second year are descriptive of those used throughout the study. The objective evaluation consisted of standardized tests and locally constructed instruments. The academic progress of the students was measured by tests of educational development. For business education, two tests were constructed; one was a time-writing for speed and accuracy and the other was an objective information examination. In addition to these tests, several instruments were used to secure data from students and teachers. One of these was a reacto-meter which was constructed to seek the pupils' reactions in regard to whether the experimental process was providing more opportunity than regular classes for some generally accepted procedures and practices. Another instrument was an analysis of procedures given to participating personnel to determine whether they thought certain procedures and practices were being used more frequently and successfully in experimental classes than in regular classes. From this it was also possible to draw conclusions as to the attitude of the personnel and the procedures needing emphasis. A third instrument was a measure of adaptability used to determine a team's capacity for adjusting to changing educational needs by the utilization of modern practices. This year an instrument has been constructed to measure the effectiveness of guidance services, since this is one facet of the investigation. The data from the various measurements are treated statistically, in most cases by use of the analysis of covariance.

In such a study the opinions, suggestions, and reactions of persons involved are interesting and valuable. Team teaching and schedule modification are supported by the majority of students. Some typical comments have been: "It took me a little while to get used to it"; "Class is more interesting and the schedule for the week is not the same thing over and over"; "Teachers have more time to prepare and they teach better." The acceptance of the experimental program by the parents and community is also exceptionally good. Criticism has been negligible, but there have been numerous questions directed to the teachers, principals, and members of the administrative staff by individuals seeking information about the program.

In general, the teachers and principals have a favorable attitude toward the project. They have participated actively in setting the design and moving the research along. They have expressed opinions which indicate that there are the following advantages in team teaching and schedule modification: teachers make better preparation; students have the benefit of more outside resources; cooperation and teamwork are promoted;

teacher specialties are used to better advantage and teacher weaknesses are neutralized; students are interested in the program; there is better placement of students in terms of patterns of learning and rates of growth; greater flexibility is developed in teachers and fear of change is overcome; teachers are relieved of some routine duties; better instructional methods result in enriched opportunities for pupils; new teachers are oriented more rapidly and progress further during their first year; in case of illness or other demands, a team program goes along more smoothly; and teachers "feel more professional."

Some of the difficulties noted are: it takes time to develop team spirit in some instances; teachers sometimes feel that their responsibility for individual students is dissipated; inexperience causes some problems in scheduling; some facilities are not adequate; and in some cases, it is not possible to arrange mutual planning time for team members during the school day.

Briefly stated, evaluations indicate that considerable progress has been made in the effective utilization of professional time, the use of material and personnel resources, the development of appropriate teaching procedures, the promotion of good attitudes and morale in teachers and students, and the provision of adequate facilities and equipment.

Conclusion

The purpose of this study in Jefferson County, Colorado, is to determine the effects of team teaching and schedule modification on the educational progress of students in the secondary schools. This is part of a larger challenge to identify ways of improving the utilization of the staff. Some of the patterns which have been developed in the past and which have served a useful purpose are no longer adequate for today's educational task. It is essential that educators constantly assess the instructional program and implement necessary changes with a minimum of delay. Involvement in solving critical problems in education can be one of the greatest motivating factors for professional persons in the improvement of instruction. Actual participation in research hastens the discovery of answers; but even more important, it drastically reduces the time required to place these answers into productive educational practice. Jefferson County, Colorado, School District R-1 is dedicated to the unceasing quest for better procedures and approaches. The study described here is a part of this program.

THE NEED FOR AND EFFECTS OF SCHEDULE MODIFICATION IN WAHLQUIST, ROOSEVELT, AND HURRICANE HIGH SCHOOLS

BY MATTHEW F. NOALL*

The class schedule, as operated in a secondary school, should achieve the educational pholosophy set up by the purposes of the school. Yet the necessity to handle pupils on a quantitative rather than a qualitative basis frequently develops extreme rigidity in the program. The principal who, during registration procedure, places pupils in channels which provide little opportunity for escape too often has been considered an efficient school administrator. In such situations pupils move from room to room with clockwise precision. At the end of a school day many of those exposed to uniform presentation of lesson material in set time periods feel, consciously or unconsciously, that their individual needs and interests have had little in common with what they have received.

Class schedules should be reorganized for quality learning. If the schedule is really to become the servant of such an educational philosophy, it should indeed provide the opportunity to accomplish the declared purpose. It should foster pupil responsibility for learning, and should recognize creative inquiry and the differences among the learners. It should provide opportunity for independent study, differentiation of services to pupils, large- and small-group instruction, a variety of avenues to knowledge, and time for professional growth of teachers.

The introduction of staff utilization studies in the State of Utah has provoked many schools to revise their scheduling practices. A redeployment of teachers and pupils requires modification of rigid scheduling

* Executive Secretary, Utah Central Research Committee, The Secondary School Principals' Association of Utah, Salt Lake City.

techniques. The improved use of the special competencies of teachers for more pupils has thus been made available.

In Utah the teaching schedule at the Hurricane, Wahlquist, and Roosevelt Junior High Schools has attempted to illustrate the value of this type of educational program. At Hurricane, a small, rural school, the new procedure has been tried in the language arts program. In grades ten, eleven, and twelve, students have been placed according to individual needs rather than the usual grade classification. A special formula, developed by the faculty, has aided this classification. Newly developed curriculum materials have been designed to cover a three-year sequence. Formerly pupil registration and class scheduling had been extremely rigid in this school. A single class included pupils of all types of mental ability. The regrouping has classified pupils according to interests and abilities. The new plan has enabled teachers to capitalize upon their special capabilities.

Specifically, the project has demanded of the teaching staff a better use of both time and talent:

1. By scheduling language arts classes for flexible grouping of pupils in combined, broken, or smaller units for individual activities.
2. By grouping pupils more homogenously in order to gear the instruction more closely to particular student needs and abilities.
3. By stimulating teachers to improve instructional procedures and techniques.

The following schedule made possible for flexible grouping for specific purposes, such as audio-visual instruction, large-group instruction, and also small-group instruction to provide some individual help:

	Periods						
Teacher	1	2	3	4	5	6	7
A	Sec. 1	•	Sec. 3	•	•	Preparation	•
B	Sec. 2	•	Sec. 4	•	•	"	•
C	•	•	Preparation	•	•	Sec. 5	•
D	•	•	"	•	•	Sec. 6	•

• Teaching courses not involved in nongraded English program.

The above schedule enabled sections 1 and 2 to combine for special presentations by teachers or audio-visual aids. Groups 3 and 4, and 5 and 6 could also combine or be regrouped for special purposes. Each of the four English teachers was available to go into several sections besides his own in order to make his special contributions. Furthermore, teachers could plan together for either remedial or enrichment activities.

Additional flexibility was developed through a rotation of teachers,

each of whom contributed to the special preparation of units, with an emphasis upon his own competency, such as speech, journalism, or composition, and grammar. Thus, each language arts section benefited accordingly.

To facilitate this arrangement, the principal had to fit the experimental program into the schedule and then arrange other classes around this flexible unit. The plan has now proved itself in developing greater efficiency among teachers and in promoting an increased level of learning among pupils. However, it is difficult to state whether the improved level resulted from redeployment or enhanced teaching enthusiasms. Probably all of the factors involved contributed to the improved effect.

Schedule modification in the Wahlquist Junior High School proved difficult because of the large number of pupils involved. Two hundred and fifty eighth-grade pupils were divided into two sections of one hundred and twenty-five pupils each. Each group received both large- and small-group instruction. A three-teacher-team organization with a double time block period was provided for each section. Each section was further divided into three classes which were based upon individual needs for small-group instruction. Two hundred and eighty seventh-grade pupils were programed into eight sections with a double time block period. Seventh-grade core teachers in each time block worked in pairs as a team to prepare the units in the subject areas of their own interests.

Pupils met in single or combined sections as agreed upon by the teachers. The eighth-grade teaching team cooperated for large-and small-group instruction according to the needs of pupils and efficient presentation of subject matter. A collapsible partition between two regular classrooms converted two rooms into a large area, comfortably seating one hundred and twenty-five pupils for lecture, audio-visual instruction, or pupil reports. The large room was equipped with screen, overhead projector, tape recorder, movie and projection machines, speaker amplifying equipment, maps, charts, and other facilities for the saving of teacher time and the encouragement of efficient instruction.

Concentration of equipment for large classes served as an economy measure for the school district. Likewise, it provided multiple aids for efficient instruction.

The principal faced several problems in this revision, which challenge he met through clever manipulation in the following ways:

1. He recorded pupil programs on the schedule by grades.

2. The schedule groups which extended over two or more periods were placed first on the outline.

3. He paired two sections in the same subject area to permit teachers to cooperate in instructional responsibilities.

4. The mutual preparation period for teachers was treated in the same way.

5. Pupils in a teaching block were not required to break class at the sound of the class change bell. They either remained in session or formed into small groups at the request of the teacher in charge of the period.

6. After the teaching blocks were placed in the schedule, single section classes, such as band, orchestra, foreign languages, or special remedial work, were fitted into the schedule. Other classes were then placed in the remaining loopholes with special attention being given to the classification of pupils in accelerated, regular, or remedial sections.

The seven-period day in this school made possible the arrangements for athletics and other special groups.

The schedule for the experimental grouping was as follows:

Teacher	Period						
	1	2	3	4	5	6	7
A & B	7 Core		7 Core		Prepa-	7 Core	
C & D	7 Core		7 Core		ration	7 Core	
E & F	7 Core		7 Core		"		
G	Special Educ.						
H	8 Team		8 Team			Preparation	
I	8 Team		8 Team			"	
J	8 Team		8 Team			"	

The modified Roosevelt High School schedule reveals the application of the teaching-team technique in a small school. The entire eighth grade (125 pupils) were included in one large group. Four teachers were assigned three periods of the school day for the project. One period was used as a group planning and preparation period. Through a redeployment of teachers and a versatile grouping of pupils based upon needs, interests, and abilities, special competencies were made available to more pupils. And thus a better utilization of teacher time was actually accomplished.

The school faculty set up the following goals:

1. A revised school schedule providing a two-period block of time and a common consultation and activity period.

2. Better utilization of teacher time through additional periods for preparation of special services.

3. Increased teacher competencies through the utilization of a teacher's major skills for the benefit of the maximum number of pupils.

4. Better instruction through increased interest and additional time for preparation.

5. Enlarged and more skillful use of instructional material and equipment.

The organization pattern of the schedule follows:

Organization of Pupils

Period	Monday	Tuesday	Wednesday	Thursday	Friday
1					
2					
3	Conference of Four Teachers				

This pattern was modified and changed when it was found to be instructionally advisable to do so.

The modification of the teaching schedule in the examples of a large, a medium-sized, and a small school, as cited above, can be accomplished to provide an improved educational program for pupils. The education of pupils for a modern realistic philosophy of life requires versatile, flexible programs based upon the individual needs of the students. The rigid regimentation of the traditional secondary school should be modified to meet the goals somewhat similar to those here cited. Although the above examples do not include the changes that might be advisable for an entire student body, they represent first steps toward the better utilization of teacher time. Succeeding steps toward the realization of the purposes as stated for secondary education will undoubtedly follow Utah's experimental beginnings.

NASSP'S MAJOR CURRICULUM PROJECT FOR 1960

English Language Arts in the Comprehensive Secondary School (grades 7–12) will be featured in the 44th Annual Convention program at Portland, Oregon, February 27–March 2. Additional copies of the policy statement prepared by the Ad Hoc Committee for convention buzz-group discussion will be available in quantity to principals attending the Portland Convention who wish to use them for faculty discussion in their own schools. English Language Arts includes Reading, Composition, Grammar and Spelling, Speaking, Literature, and Listening.

THOSE FIRST STEPS

BY JAMES D. LAURITS*

High school people might well begin to sing, "Oh where, Oh where, has my incubus gone?" Some of us will hardly know what to do without the demon. It does seem, does it not, that the Carnegie unit has died without anyone's having noticed. As yet, I detect no worry on the part of the colleges as everyone and his cousin talks about new schedules and new methods. It is apparent that the great comprehensive high school is in one of its periods of accelerated development and one hopes that the colleges can handle gracefully the changes now under way.

Since Cubberley Senior High School opened its doors three years ago, the faculty has given thought to making a schedule which would provide better student programs without adding to teacher load. The school started in 1956 with a six-period day and a five-class maximum load—no homerooms, no study halls. About 75 per cent of the students go on to some form of higher education.

Each system has its limits and we decided quickly that our schedule had three: (1) It did not offer enough opportunities to some students. Probably 20 to 25 per cent of the student body could take at least one more subject. (2) The schedule tended to keep many elective offerings at a minimum and to keep the brighter students out of these classes. (3) The schedule was inflexible, sometimes to the point of interfering with good learning experiences. Points one and two above were related to our desire to have strong departments in art, business, home economics, industrial arts, and music. However, we also said the following: "A warning must be issued here: whether any scheme is of value to our so-called elective departments depends on more than the time schedule itself. These departments develop only if they offer high quality courses to all types of students

* Principal, Cubberley Senior High School, Palo Alto, California.

and only if our administrative policies treat the courses as necessary and worthwhile."

Meanwhile, the schedule was already being bent here and there. A few students were taking seven or eight subjects in the six-period day. We might find a boy spending only three days a week in history and spending the other two days in a Latin class. In 1958, the mathematics department began a course that met with the teacher only four times in the week. In the remaining period the students went to the school library to read and to browse in the mathematics collection there, making written and oral reports when they struck any ore that pleased. Parts of the social studies department were behaving strangely also. One would see small groups of students working outside at various spots and then find only six or seven left in the room with the instructor.

We determined to run a pilot study in 1959. Our plan was to give an extra class to some students and to make sure that the class was a complement to the usual five academic necessities. For the trial we now have 125 sophomores, those selected originally to be in the high aptitude English classes. In order to get the extra course we "floated" the physical education class for the 125 students, thereby cutting five of their classes to four-times-a-week. The teacher is free in the period where the class does not meet:

The program of a student in one of the five groups:

Period	Monday	Tuesday	Wednesday	Thursday	Friday
1	English	English	English	English	P.E.
2	P.E.	Geometry	Geometry	Geometry	Geometry
3	History	History	History	P.E.	History
4	Elective	P.E.	Elective	Elective	Elective
5	..... Science				
6	..... Language				

The schedule seems to add strength to our elective courses. The seven-period sophomores, in their extra course, are spread throughout twenty-six of the classes:

	Students		Students
Art Department	24	Industrial Arts Department	28
Business Department	13	Music Department	34
Drama	2	Science	6
Home Economics Department	13	World Geography	2

Naturally, some teachers are concerned about the change from five periods a week to four periods a week. As yet we do not have answers to match these concerns. Can a quality job be done in English classes that meet only four times a week? In mathematics, can we expect the new cur-

riculums of the School Mathematics Study Group to be successfully introduced on the short schedule? Language teachers feel that they must remain with a schedule that allows them to meet their students each day of the school week. However, the sophomores seem to like the new schedule and there has been almost no concern on the part of the parents.

What are the next steps for us? Perhaps we must increase opportunities for many more students in the school by wider use of the four-times-a-week classes. How can we introduce additional class sections without increasing our average class size to a point that is harmful to instruction? Perhaps some trials with large-group instruction will give us part of the answer. Perhaps we could use resource centers that are replacing the old study hall in many new high schools. Is it not possible that some classes would meet with the teacher only three times a week, with the students working on their own in the other two days? Such a schedule would give teachers more freedom to plan and to confer with individuals and small groups.

As soon as we begin to talk about resource centers for students and about large-group instruction plans then we begin to enter the field of school architecture. Does anyone have $500,000 for Cubberley? We could just about make the old school habitable.

CITIZENS COUNCIL ENDS ITS WORK

The end of an era in education was indicated last week by the announcement that the National Citizens Council for Better Schools will close its doors. This is the end of a vital chapter in the national citizen movement.

When the movement was born in 1949, at the suggestion of James B. Conant, then president of Harvard University, its job was to rebuild the bridges between the public schools and the public that had been all but burned by general apathy.

Now, a decade later, it has been decided that the support of the schools can best be carried on at the local and state levels.

There has been some questioning as to the wisdom of closing the office of the council at this moment. The needs of the schools are as overwhelming as ever. Bond issue defeats have been increasing. The Conant Report and other critiques of the schools have rekindled education debate and conflict. That there has been some question about the wisdom of terminating the council's life, even among its own directors and sponsors, is indicated by the announcement that its charter will be temporarily kept active. This might offer the chance to get back into business if there is a strong enough demand.

—N.Y. Times, December 20, 1959

A MORE FLEXIBLE SCHEDULE AT FREMONT

BY VERNON CORDRY*

Because Fremont Union High School District has already embarked on a team-teaching project this 1959–60 year in social studies, it seems a good time to consider flexible grouping of students in other subjects in the curriculum. That is what we are doing now in anticipation of the 1960–61 school year. We are not taking the full sink-or-swim treatment. We plan to get our feet wet gradually. We do not intend to throw any teacher into the flexible-scheduling "pool" unless the teacher requests.

What do we mean by "flexible scheduling?" We mean varying the amount of time in the day-to-day subject schedule to concentrate more time on certain subjects on certain days and equivalent less time on other days. It still will add up to 275 minutes a week, or the equivalent of five 55-minute periods in the subject. This is not to be confused with an equally interesting concept of variable scheduling which might cut a music period to 20 minutes and apportion the extra time to a laboratory or shop period where it would be possible to do more concerted work in proportion to the wasteful "get-ready" and "clean-up" time in such courses.

At this point, we are thinking in terms of varying the schedule for about 130 junior students in biology next year at the request of Harry Johns, Fremont High School biology teacher. Students in the other two high schools in the district will not be involved in this preliminary change.

We have used this same approach of "half a loaf being better than none" in our present team-teaching program, feeling that it is better to experiment on a limited simple scale than to dismiss the whole idea as too difficult or earth-shaking to attempt.

The district's mother school, Fremont, has 1,481 students and is thus

* Director of Public Relations, Fremont Union High School District, Sunnyvale, California.

large enough to have sufficient sections of college preparatory junior and senior social studies classes to warrant a simple version of team teaching by merely combining classes. Thus 240 juniors group in three classes of eighty and a like number of seniors in three other groups. Two teams of two teachers each work with these classes, using a double room that has a sliding partition that may be closed for smaller discussion groups.

This does not bring the discussion groups down to the ten to fifteen students such as in the Colorado experiment, but we manage to reap some of the main benefits of team teaching in that one teacher of the team may utilize class time to prepare material for presentation to the class at a later time. Much visual-aid material is thus prepared for use on an overhead projector during these preparation periods.

In addition, team teachers are freed from much of the clerical work that impedes concentrated teaching effort. We hire a "paraprofessional," or class clerk to take attendance, issue hall passes, type mimeograph stencils of instructional material and tests, record grades, and many other similar time-consuming duties.

There is a good possibility that this new flexible-schedule move may pave the way for team teaching in science. At this point we are not contemplating going all the way as has our neighbor, East Side Union High School District in the Andrew Hill High School general science courses.

Fremont has scheduled a district-wide meeting in the near future of teachers and administrators of the three high schools to review progress in the team-teaching field and to discuss possibilities for the future. Teachers will be asked to request in writing what they would like to do.

"In my estimation, if you want to insure failure of any new program, all you have to do is force teachers into it against their will," comments Miss Winifred Coomb, assistant district superintendent in charge of instruction and curriculum. "When we launched the team-teacher program in social studies, it was a voluntary operation and much of its success in social studies is directly dependent on the enthusiasm of the instructors."

Our Mr. Johns of Fremont has taken a long look at the large-group social studies meetings and is convinced they offer much in presenting lecture-type material accompanied by visual aids. He feels that the social studies team teachers "have something there" when they can put over this type of material in one presentation instead of having to repeat it three or four times for smaller classes.

A tentative schedule would have four of Johns' science classes in the flexible group meeting together for a 55-minute first period on Monday, then Unit A of 25 students would have a double biology laboratory period in Periods 2 and 3 on Monday and Wednesday, Unit B labs would meet the same periods on Tuesday and Thursday, Unit C would meet Periods 5

and 6 on Monday and Wednesday, and Unit D would meet the same periods on Tuesday and Thursday.

It may be necessary to schedule a regular five-day-a-week biology course for juniors during Period 4 for those juniors who could not be in the flexible schedule or team-teaching programs.

Thanks to the team-teaching program for college preparatory students in social studies, it will be possible to schedule the double-period biology students into U.S. history classes on other days of the week. Students' first periods, other than the Monday lecture period, could be used for study or for taking some cultural non-academic class such as choir.

There is nothing new in the use of double periods in the district; these have been used in shop classes for many years for vocational students. It is new to us to attempt flexible scheduling for college-preparatory classes.

"At this point, we are in that stuttering, fumbling phase we'll have to live with until our plans take better form," says Miss Coomb. "It may become necessary to bring in English or some other required academic subject to make the plan work for a larger number of students if that becomes necessary."

If we reach beyond the college-preparatory group in this flexible scheduling plan, we will be able to make more double periods for woodshop, metal shop, auto shop, homemaking, and some business education classes such as typing and business machines.

Courses involving mastery of a skill frequently benefit by longer concerted effort, and certainly the shop courses which have tool checkouts and returns and shop cleanups at the end of the period will be aided by the longer periods.

As anyone can see, we are at the probing, preliminary stages of flexible scheduling. We think it offers sufficient worthwhile features to warrant the extra work in partly revising our class schedules. It is going to be a lot harder to plan these schedules but we think it will be worth the effort in breaking away from our traditional five-periods-of-55-minutes set-up.

EXPERIMENTATION AT NEWTON

BY HAROLD HOWE II*

For three and a half years Newton High School has made extensive commitments to the idea of greater flexibility of the secondary-school program. In Newton High School the major attack on the traditional arrangements of the secondary school has been through the re-grouping of students for the purpose of instruction. This re-grouping has, in turn, meant the complete reorganization of curriculum in several subject fields, and an entirely new approach to the definition of the jobs of some of the high school teachers.

In the Meadowbrook and Day Junior High Schools of Newton, the last two years have seen efforts to make further use of less rigid time schedules. Both of these schools are operating on one-half hour modules of time, and both schools have arranged schedules which offer most subject fields the opportunity for classes ranging from thirty minutes to one hundred and twenty minutes. In these junior high schools, these efforts at rearranging time have automatically resulted in the need for new curricular materials, since the flexible time arrangements have created the possibility of a more extensive approach to ability grouping and, therewith, the need for a curriculum which is carefully defined for various levels of student performance.

In the high school, the use of large groups for a certain proportion of instruction in English, mathematics, biology, United States history, world history, and typewriting, is based on the assumption that there are topics in each of these fields which can be covered better through the careful attention of a teacher-lecturer with adequate time for preparation of his lessons than by a classroom teacher who faces the normal pressures of the secondary-school treadmill. All of the large-group instruction in the high school is accompanied by a high proportion of specially prepared visual

* Principal, Newton, Massachusetts High School.

materials, and extensive use is made of the overhead projector for the presentation of these materials. In addition, the school has used slides, movies, television, and demonstrations to provide the visual elements of its large-group teaching.

Newton High School now has three full-time teacher-lecturers—people who specialize in large-group instruction and who teach, at the most, two days per week. All the rest of the time of a teacher-lecturer is available for careful preparation and for liaison with other teachers who are doing equally important work in normal-sized classes. The high school has not yet made extensive use of smaller than normal-sized class groups, but hopes to plan for this as soon as building facilities become available with the opening of the New South High School in Newton in September of 1960. The work mentioned above in the junior high schools, as well as that of the senior high school, has resulted in a considerable need for the retraining and the reorientation of teachers, since both projects have confronted the teacher with new classroom situations. As a result, the Newton Public Schools have been running workshops for teachers in the high school for the past three summers and during the last summer for teachers in the two junior high schools. Teachers are paid to attend these workshops, and leadership for the workshops is provided from the staff of the Newton public schools. It is quite clear to administrators in Newton that a school system must put a portion of its energy and money into the retraining of teachers if significant changes are to be made in what we teach, in how we teach it, and in how we organize our schools for effective instruction.

Attempts at evaluation of these new, and somewhat revolutionary, approaches to the secondary school are far from definitive. But these attempts do show, on the basis of valid testing procedures, that the quality of education, insofar as it can be measured by tests, has not suffered through new approaches. In fact, there is some slight evidence of gains in testing results. Administrators in the system feel that the ferment created by attempting new forms of flexibility has complicated their jobs and made their lives more difficult. At the same time, they are quite certain that this ferment in the area of school organization has caused their educational pot to overflow, resulting in new activity in curriculum content, in methodology, and particularly in the alertness and creativeness of teaching staff. It is clear from experience in Newton that, although the process of moving people out of their educational rut can create discomforts, it can also produce excitements which are worth the trouble for both student and teacher. It has been observed by some wise person that a rut is nothing but a grave with both ends open. Newton does not claim that it has risen from the dead, but it does feel that its recent attempts to promote flexibility in the interests of better teaching and better learning have given it a new lease on life.

A FLEXIBLE SEVEN-PERIOD DAY IN JUNIOR HIGH SCHOOL

BY A. C. STEVENS*

Palo Alto, California, planned to open a new junior high school in the fall of 1958. The principal was chosen and assigned two years before the opening date. This allowed the principal to work with committees of teachers on the plans for the building as well as in selecting teachers who were willing to try new schedules and new methods of teaching. Naturally, the best teachers possible were selected from those willing to teach six periods if the new program called for a seven-period day.

The educational program at the new Terman Junior High School during its first year in its new building (1958–59) was organized into a seven-period day. This was an attempt to make it possible for students to include an additional elective such as foreign language, music, art, shop, etc., in their daily programs. It was recognized that there would be some advantages and some disadvantages in this schedule.

The Terman faculty members spent considerable time in evaluating this program. After one year we reached the following conclusions:

1. There is not enough time to teach the subject matter in the seventh- and eighth-grade English, ninth-grade algebra, geometry, and biology.
2. There are too many students contacted by each teacher in the seventh- and eighth-grade English and social studies classes.
3. There are too many papers and preparations for English and social studies teachers.
4. There is need for more teacher-supervised English study.
5. There is not a long enough period for shop and homemaking classes.

It was decided to retain the seven-period day with necessary modifications in certain areas. The seventh- and eighth-grade programs include

* Principal, Terman Junior High School, Palo Alto, California.

two periods of English. Those students who qualify to start a foreign language in seventh grade take the foreign language during one of the English periods.

The eighth grader has a double period of shop or homemaking for one semester. The second semester he is able to choose two electives.

Here are samples of the seventh- and eighth-grade programs:

Period:	1	2	3	4	5	6	7
7th	(For. Lan.) English	English	Soc. Stud.	P. E.	Arith.	Sci.	Art Music
8th	English	English (For. Lan.)	Soc. Stud.	Arith.	P. E.	Shop or Homemaking Elective	

The ninth-grade program provides some double periods for increased time in algebra, geometry, and biology. These schedules may look like this:

	Monday	Tuesday	Wednesday	Thursday	Friday
Period 1	Biology	Biology	Biology	Biology	Biology
Period 2	Biology	Algebra	Biology	Algebra	Biology
Period 3	Geometry or Algebra	Algebra	Algebra	Algebra	Algebra
Period 4	English	English	English	English	English
Period 5	F. Lang.	F. Lang.	F. Lang.	F. Lang.	F. Lang.
Period 6	Soc. Stud.	Soc. Stud.	Soc. Stud.	Soc. Stud.	Soc. Stud.
Period 7	P.E.	P.E.	P.E.	P.E.	P.E.

The above schedule can be changed the second semester to give algebra three days with double periods and biology two days.

For students who do not select biology, a three-day elective—study, hygiene, general science, etc.—can be substituted to fill in the double period. This also leaves an additional elective period:

	Monday	Tuesday	Wednesday	Thursday	Friday
Period 1	Elective	Elective	Elective	Elective	Elective
Period 2	Study	Algebra	Study	Algebra	Study
Period 3	Geometry or Algebra	Algebra	Algebra	Algebra	Algebra

The double periods in algebra and biology will also provide an excellent schedule arrangement for team teaching and equipment utilization. By scheduling another algebra class at first period, both or several classes can fall together in second period. This has been done this year with excellent results.

The first period in the morning is 55 minutes in length. This allows for approximately ten minutes of homeroom. Fourth period is 50 minutes with approximately five minutes for any noon announcements. All periods then are 45 minutes in length for teaching purposes.

The homemaking and shop teachers have discovered that they are not accomplishing as much in the double period one semester as they did in a single period for one year. They assumed there would be a great saving in time when getting out and putting away equipment. They had not calculated on the amount of time a student put in over the year outside of class—either after or before school or at home.

The double English period for seventh and eighth grade with some students taking foreign language is producing excellent results.

We are seriously considering more subjects, especially electives, on a three—two-day arrangement for next year. We hope to retain a seven-period day for students, but we also are desirous of moving to a five-period day for teachers.

EDUCATORS RECOMMEND FEWER CREDENTIALS

The California Council on Teacher Education has revised and approved the recommendation of the State Department of Education to reduce the number of teaching credentials from 58 to 7.

If the State Board of Education approves the proposal, it will be presented to the Legislature in February.

The seven credentials listed in the proposal approved by the Council are (1) elementary standard, (2) secondary standard, (3) junior college standard, (4) administrative, (5) designated services, (6) designated subjects, and (7) supervision.

Procedures for renewing the seven credentials and for making any one of them a life credential will follow present practices for the existing 58 credentials.

Persons who hold teaching credentials or who are in the process of qualifying for one of the existing 58 credentials will not be affected by the new plan.

—*The Courier*, L.A. City Schools, December 1959

EXPERIMENTING WITH A DOUBLE-PERIOD SCHEDULE AT SAN MARCOS HIGH SCHOOL

BY DONALD L. STILLMAN*

San Marcos High School is a "new" school in the Santa Barbara High School District. First opened in September 1958, the school occupied temporary quarters on the old Riviera campus of Santa Barbara State College. The student body consisted of 700 ninth- and tenth-grade students. This past summer, the staff moved into the newly finished Goleta Valley campus and prepared to greet 800 returning tenth- and eleventh-grade students.

From the time a staff was selected for San Marcos High School, there was presented a challenge to take a good, solid look at everything in the curriculum: the schedule, the student organization, and, in fact, everything connected with the school. The staff was in no way bound by tradition in their planning for the school.

In planning the schedule, ideas developed along with the pattern of required and elective studies. Requirements were set up to include three years of English, three years of social studies, one year of mathematics, one year of science, and three years of physical education. It was the desire of the staff to arrange a program in such a way that students would have the time and opportunity to take a broad selection of elective courses, as well as pursuing major areas of interest in depth. In order to give students the opportunity to carry up to six subjects in addition to physical education, the staff selected a seven-period academic day. It was felt, however, that no matter how talented the student, six preparations a day would be too many. As a result of our study, a more flexible schedule was developed.

* Principal, San Marcos High School, Santa Barbara, California.

The seven-period academic day consists of seven, forty-minute periods that follow a daily, forty-minute guidance period. The activity and assembly program is taken from the guidance period, so there is seldom a time when the academic day is interrupted by these activities. Four academic periods are scheduled before lunch, and the remaining three in the afternoon. Subjects are scheduled so that some classes meet daily for a single period, some classes meet three times a week in double periods, and some classes meet two days per week in double periods. In order to equalize the time factor, classes meeting Monday, Wednesday, and Friday in the fall semester exchange at midyear with those meeting Tuesday and Thursday. Students' programs are arranged so that they carry daily physical education classes plus two other daily single-period classes. They also carry two classes that meet in double periods three times per week, and two classes that meet in double periods twice each week. This means that while a student may carry as many as six academic classes per week, he carries only four on any given day.

Teachers' schedules are also affected by the double period. The normal load finds teachers carrying two classes that meet daily, two classes meeting in double periods three times per week, and two classes meeting in double periods twice each week.

In two years of experimentation with this type of scheduling, all areas of the curriculum have tried the double period except physical education. Our early evaluation would seem to indicate that the double period is most successful in science, industrial arts, homemaking, and art. Success seems to vary in English and social studies, and would appear to be somewhat related to the ability level involved. The program has been least successful in beginning foreign language and business education courses.

Plans for next year involve reducing the teaching load from six to five classes per week. This will mean that teachers will have an extra preparation period each day. We also envision increased use of teacher aides to help with the routine of correcting papers and marking themes. The guidance staff is striving to improve groupings in English, social studies, and mathematics.

The schedule we are trying at San Marcos has given us an opportunity to break with tradition. If it has made any major contribution, the schedule has stimulated thinking among the entire staff in a search for new and better ways to arrange a secondary-school program of studies.

TELEVISION AND SCHEDULE REVISION IN UTAH

BY JOHN A. LARSEN*

Weber High School was faced with a problem this year that faces many of the nation's schools—either to go on double sessions, add temporary buildings that would penalize the district in obtaining state building monies, or to be bold and pioneer a program using closed circuit television.

After scrutinizing the potential of television as a valuable teaching tool and becoming fortified with the splendid results of other school districts, we took confidence and forged ahead. We felt confident that we would not hinder the learning process, and even that in some cases we might enhance both teaching and learning.

After we made this decision, some other problems reared their ugly heads. Which subjects were best suited to be taught over television? Which had large enough enrollments that scheduling them for the auditorium for TV lessons would free enough rooms to schedule another subject that same hour and fully utilize precious teaching space?

We were also faced with the problem of scheduling subjects so that the students could go to classrooms for small-group discussion, follow-up work, and more personal contact with the teacher following each large-group televised lesson.

After much discouraging work on scheduling, we were about to give up, when Roy Metcalf, principal of the school, found one way it would work, but not necessarily with the subjects that some might think best suited to TV instruction. However, we were willing to try it and then we could add our findings to the ever-growing file of information needed in the field as we develop the medium.

* Director, Educational Television, Weber County School District, Ogden, Utah.

So with this help we started scheduling all sophomore biology students for two sections, first and second periods and all juniors in U.S. history the same periods. This way the 400 in each section could use the same number of classrooms alternately with the auditorium on alternating days—one day in the auditorium for large-group instruction lesson via TV, and the next day in small groups of twenty-five to thirty for more personalized instruction with the teacher, giving time for questions and answers on the previous day's TV lesson.

Using this pattern, we scheduled through a seven-period day, five days a week—sophomore English in two sections against one section of health and one of eugenics; two sections of junior English against one section of American problems and one section of world history; and one section of senior English against a second section of world history.

In a school that was constructed to house 1,400 students, we are now handling over 2,100 students, utilizing a heretofore little-used 720-seat auditorium, but more important than this, it was done without destroying the quality of education. To the contrary it is giving better instruction and our students are doing as well, or in many cases better than in a traditional situation.

The credit for this can go partially to the impact that TV has on boys and girls, more to the longer hours of preparation and better teaching of our teachers, and much to the cooperation of the students to make it work in a difficult situation.

NEW DESIGNS FOR SECONDARY-SCHOOL SCHEDULING

BY WILLIAM JACK STONE*

Will the child of today have pleasant memories of school, or will he think of himself as being one lost in a school with a population of 1,500 or more? Large modern secondary schools may be missing an opportunity to give adolescent youth the feeling of security that they get from knowing their teachers and other students well.

The organization of student block-time programs, small school units, instructional and school administration teams described here was developed over a seven-year period by the faculties of Gompers and O'Farrell Junior High Schools in San Diego.[1] During this period the schools have ranged in enrollment from 900 to 2,200.

Various neighborhood patterns within the district include: a socio-economic range from upper-lower to middle class, a cross section of ethnic representation, and a predominant picture of new housing constantly developing over the past seven years. While most of the population are newcomers to San Diego or to the area (one neighborhood is composed entirely of Navy housing), one neighborhood community has been in existence for over thirty years. The students reflect a cross section of home and educational backgrounds which include representatives from all fifty states. All are eager to learn; school is important and constitutes the one unifying core to an otherwise exceedingly diverse collection of local unestablished neighborhoods.

Major objectives governing the organization of the school are: (a)

* Principal, Mabel E. O'Farrell Junior High School, San Diego, California.

[1] Dr. William Jack Stone served as principal of Gompers Junior High School from its inception in 1954 to the present, when he shifted to the new O'Farrell Junior High School, organized from the larger portion of the Gompers district to relieve the overload.

guidance to young adolescents, (b) initiation into departmentalized study of subject matter, and (c) improvement in classroom instruction and in-service help to teachers. Characteristics of the school program are highlighted below.

1. *The student's program*

In elementary school the child has been with one teacher and one group of children for the entire day. Upon entering the seventh grade he is often confronted with six different teachers and six different groups of students, few of whom he may know. This change, accompanied by the natural problems of adolescence, adds greatly to the student's adjustment problems.

a. *The block program* provides each student with a two-or-three period block of time with the same teacher. At seventh grade the time block may consist of two periods for English and social studies or three periods for English, social studies, and arithmetic. At eighth and ninth grades the time block is two periods for all students, consisting of either mathematics and science or English and social studies, depending on which is elected by the student. These courses are frequently referred to as *basic courses.*

b. *The counseling teacher* is a teacher of the block program or basic course, and one of his major functions is to counsel and guide the students in his counseling class.

c. *Pattern scheduling* is the development of the master schedule through assignment of a pattern number to a group of students who have the same program for the major portion of the day except in certain electives and in courses which call for the separation of boys and girls.

d. *The student government* at O'Farrell is organized on a grade level basis; each grade acts as a separate division with its own officers, student body, and sponsor.

e. *The enrichment program* is the before or after school schedule which includes co-curricular activities, supplemental enrichment classes, remedial instruction, and parent conferences. Each of the six periods of the day is shortened a few minutes and the accumulated time is used for a seventh enrichment period for interested students. Since the regular school day for seventh grade is scheduled from second through seventh periods to extend the use of school plant and facilities, the enrichment period for this grade occurs during period one.

2. *"School within a school" plan*

Gompers and now O'Farrell staff members have gradually developed an organization which consists of six (two at each grade) "small school" units within the total large school. When the enrollment in a junior high school reaches large-school proportions, the small school organization helps to create an atmosphere conducive to a feeling of security for each student.

The small-school idea is further developed by the assignment of children of the same grade level where possible to classrooms adjacent to one another. The students of a grade are programed in general during their block-time period to the same section of the building. However, since all of the students must use the same shop and physical education and other specialized facilities, a particular group cannot remain in the same area throughout the day.

a. *Small school* is a unit within a large school. This unit, which includes half of the students at each grade level, has its own student body, teachers, counselor, and administrator who plan the program for the small school.

b. *A "small school" faculty preparation group* is a group of teachers of a small school who have the same preparation period and teach the same half of the student body at a grade level. With the exception of physical education and some special area instructors, the teachers of a particular group of students are scheduled for the same preparation period.

Since all physical education teachers teach at every grade level, each small school faculty preparation group includes a representative teacher from the boys' and the girls' physical education departments. For example, half of the eighth grade has physical education one period while the teachers of these eighth graders, plus representatives from the boys' and girls' physical education department, have their preparation period. This group of teachers and students are members of one small school of the eighth grade. During another period, the other half of the eighth grade has physical education; and teachers of this group are scheduled for their preparation period.

This arrangement gives teachers an opportunity to discuss the individual students and plan the proper guidance and instructional program for their group; it allows time during the school day for parent-teacher conferences which all of the teachers of a particular student may attend.

c. *The guidance counselor* is the person assigned to handle student personnel and guidance problems of a small school and to serve as

an administrative assistant in matters designated by the vice-principal. He has the same preparation period as the teachers of the students he advises. Being a member of this preparation group enables the counselor to discuss with the teachers the total guidance program of individual students. At O'Farrell the counselor handles all of the major guidance and discipline referrals of the students in his small school; and he follows through on each case with the student, the referring teacher, the counseling teacher and, in many cases, the parent.

3. *Instructional teams*

The O'Farrell Junior High, along with four other secondary schools in San Diego, has participated for the past two years in an experimental project under the NASSP Commission on Staff Utilization. Purposes of this project include extension of the influence of experienced teachers over a larger number of students, recruitment of additional personnel to the teaching profession, more adequate induction of new teachers to the school system, and general improvement in the instructional program through making available to students the resources and skills of the several adults constituting the teaching team.

a. *Teaching teams.* O'Farrell at present has teaching teams operating as a part of the project mentioned above in ninth-grade English, ninth-grade mathematics-science, typing, and girls' physical education. The general characteristics of a teaching team include designation of an experienced and well-qualified teacher as the team leader, a second certificated teacher new to the system as a member of the team, and the assignment of two noncertificated teaching aides (college students) as a part of the team staff. This complement of four adults provides classroom instruction to the equivalent of three class groups of students. Advantages to this type of approach to instruction include provision for large-group presentations to students by the staff member of the team most capable of making the presentation, provision for operating in small-group instruction situations (smaller than normal class size), and provision for remedial and enrichment help to individual students. The routine tasks connected with teaching are assigned to noncertificated personnel, thereby releasing the certificated personnel for the more professional aspects of the teaching job. The net effect of a staff of four, planning together for the total instruction of a group of ninety students, tends to improve the quality of instruction received by each student.

b. *Departmental teams.* Each of the subject-matter departments at

O'Farrell is likewise organized on a team basis with the department chairman serving as team leader. The chief distinction between the teaching team and the departmental team is that the latter represents largely a pooling of the resources and skills of the teachers in a given department to improve the total instructional program of the department. However, it does not normally involve grouping classes of students together for joint teaching even though, within a given department, two or more teachers may pair off to develop the type of teaching team described in point "a" above. In a departmental team, for example, an art teacher especially skilled in clay work may help the other art teachers in this area and in turn receive help on some other aspect of art. An industrial arts teacher skilled in student organization of the shop or development of attractive bulletin boards may help other industrial arts teachers in these areas.

4. *School administration*

The administrative pattern is planned to make the small school and team organization more effective. Each grade has two small school faculty preparation groups, two guidance counselors, one curriculum coordinator, all under the immediate supervision of one vice-principal. This distribution of administrative responsibilities prevails when enrollment is above 1,800 and three vice-principals are provided. When enrollment is lower administrative duties are redistributed among the principal and vice-principals.

a. *The vice-principal,* under the supervision of the principal, assumes responsibility for administration and supervision of assigned subject-area departments and teams, including classroom visitation and instructional help to teachers.

   The principal and the vice-principals divide the responsibility of coordinating curriculum and the work of consultants and supervisors in the various subject areas. In addition they assume responsibility for supervision of custodial services, general school plant operation, the library, publications, public relations, P.T.A., attendance, and health education and guidance offices.

b. *The curriculum coordinator* is assigned to each division to work with counseling teachers on group guidance and to assist the vice-principal in all phases of instructional improvement.

SECONDARY-SCHOOL SCHEDULING— A BREAK WITH THE PATTERN

BY DAVID A. SANDS*

In designing a schedule that differs from the usual secondary-school pattern it helps to be organizing a new school. Under these circumstances traditions are not broken, they are being established. This fortunate state of affairs came to pass in San Angelo, Texas, when, because of a building utilization problem, a school serving only one secondary-grade level was created. Because of the San Angelo Instructional Program, however, it was necessary to schedule classes on three levels of instruction even in this one-year school. San Angelo provides three "rails" of instruction: Rail One designates the program for superior performing students in any one or more subject areas; Rail Two is the typical college-preparatory program; and Rail Three is a terminal high school course.

Although having three different English courses, mathematics courses, and so on, made this school somewhat similar to a typical three-year junior or senior high school, there were important differences. First, only four of the seven course areas were "railed" or differentiated, leaving three as common to all students. English and reading, mathematics, science, and foreign language were to be taught on two or three levels; while social science, physical education, and fine arts courses (music, band, art, and orchestra) were to be taught on one level only. Compounding this situation, some students were placed on one level in one subject and another level in other subjects.

A second difference from a typical secondary-school program was that, since lunch, a homeroom period, and the eight subjects, including one of the fine arts electives, were to be required of all students, classes could not be the typically uniform 45, 50, or 60 minute periods. Along with this, it

* Director of Instruction, San Angelo City Schools, San Angelo, Texas.

was felt that each subject would not necessarily require an amount of class time equal to all other subjects.

Factors Involved in Scheduling

A decision was made to organize the school day on the basis of thirteen 30-minute modules. Each student's schedule was to include a daily average of one module apiece for the following purposes: lunch, homeroom, the fine arts elective, foreign language, and natural science. Each student would spend an average of one and one-half modules (45 minutes) a day in each of the following areas: English, reading, mathematics, and social science. The remaining two modules were given to physical education. It was felt that in order to provide for changing clothes, showering, and some 30 to 40 minutes of activity, a one-hour period of time would be required. Note should be made of the word "average" in time spent daily by each student in the various program elements. This matter will be discussed later.

Three conditions needed to be determined before the construction of the schedule could take place: one, the number of courses to be offered (each "rail" was considered a separate course so that there were three courses available in English, three in mathematics, and so on); two, the average portion of time each course must be allotted in the school day; and three, the number of students to be involved in each course. The number and description of courses to be offered was determined by the instructional policies of the San Angelo Instructional Program. The average portion of time each course was to be allotted was decided as described earlier. The placement of students into the various courses was recommended by the school counselors after carrying through certain identification and placement procedures.

Provisions for Flexibility

At that point it was possible to determine the number of sections needed for each course. That was accomplished by the construction of a schedule of teachers' time providing for all the needed class sections. In organizing this schedule certain provisions were introduced to provide more instructional flexibility. One of these provisions was to schedule English and reading classes in conjunction. Thus, one teacher would have a total of three modules to work with his students in the area of language arts. A second provision was to pair each mathematics section with a social science section, both classes being the same length. Student Group A would have mathematics under Teacher 1 while Student Group B was having social science under Teacher 2. Student Group B would then move to Teacher 1 for mathematics, while Student Group A would move to Teacher 2 for social science. The idea was that if a social science teacher wanted one

day to have an hour-long film or even an hour-and-a-half field trip, it would be necessary to make arrangements with only one other teacher; then, over a two-day period, both classes would still average their one and one-half modules in each of the two subjects. A similar "pairing" was scheduled in science and foreign language classes. The science and foreign language teachers later decided to meet their classes only three days a week—two one-hour classes, and one half-hour class—and were able to make this arrangement without affecting in any way the other classes in the school program.

Still another provision for flexibility was incorporated to allow for relatively free student movement from "rail" to "rail." Some students, who began the year at one performance level in a given subject, later had changed to such an extent that it was advisable to move them to another level in that subject. In order to provide for this movement with the least disruption to a student's entire program, courses were set up in parallel sections. For example, if a Rail One English course began and ended at a given time, a Rail Two English course also began and ended at those times. Therefore, a student whose performance changed appreciatively in English could be moved to a more appropriate course at any time without disturbing his enrollment in other classes.

A Point to Watch

One additional factor merits attention in the construction of a schedule of classes of many different lengths (30 minutes, 45 minutes, 60 minutes, 90 minutes, and 150 minutes in certain remedial courses). There must be an ample number of classes beginning at any given time to provide for those students leaving classes at that particular time. This becomes a consideration only when all classes do not begin and end simultaneously. The balancing of this factor in a staggered class schedule is simply a matter of arithmetic.

Using the Schedule

Upon finalizing the above factors into a master schedule, it became a relatively simple task to build individual student's schedules. Since all factors had been taken into consideration in the master schedule, it was a certainty that this master schedule would provide for every student's exact program needs. In fact, many groups of students could be scheduled in large blocks, leaving only a few students to be scheduled individually. A competent secretary can efficiently take the matter from this point on, placing the students into the schedule and working up the individual student's schedules.

The results of this approach to scheduling include the provision of an individually tailored program for each student, meeting *his* personal aca-

demic performance needs in each subject-matter area. An additional result is a smooth functioning school day with greatly reduced hall traffic problems. At no time is there the volcanic eruption of students into the halls at the signal of a clanging bell. Instead, every 15 minutes of the day there are a few classes ending. This small number of students then proceed to a few other rooms where new classes are about to begin.

Probably the biggest drawback to this type of scheduling is the fact that it is, without a doubt, a tremendous administrative task to develop each year. It is likely, however, that mechanical or electronic data-processing devices will soon be adapted to provide relief from this burden.

PRINCETON SHOWS OLD "CRIB SHIRT"

Ancient Chinese Method of Cheating on Examinations is Displayed in Library

One of the rarest and oldest visual aids to education has been put on display in the Princeton University Library.

The object, a Chinese "cribbing shirt" of undetermined age, was used to smuggle information into Civil Service examinations in the Ch'ing Dynasty from 1644 to 1911.

More than 520,000 ant-like characters arranged into 720 compositions from the Four Books of Confucius cover the surface of the garment. The light-weight satin "cribbing shirt" was designed to be sewn into the lining of a student's clothing.

Once the student entered his sealed cell for the three-day test, he could apply the smuggled information to the questions, which were taken almost exclusively from the writings of Confucius.

Shih-kang Tung, curator of Princeton's Gest Oriental Library, pointed out that "since the practice of cheating was strictly against the law and the making of such a garment was terribly expensive, it is believed that only a few such paddings like this were made during the dynastic period." He said it could be the only "cribbing shirt" in existence outside of China.

In discussing the garment's age, Mr. Tung said, "Because no Chinese scholar in this country seems ever to have seen such a thing before and not a single reference can be found in any book, this still remains a mystery."

It would be difficult to over-emphasize the importance the Chinese attached to the Civil Service examinations.

Those who passed were exempted from corporal punishment and received other benefits from the Government. Preparation for the examination often took a long time and it was not uncommon for a grandfather, father, and son to compete at the same time for the same degree.

The efforts to prevent cheating were rigorous, although even the death penalty could not discourage the more enterprising cheaters.

—N.Y. Times, December 20, 1959

A book can weigh on your mind

We know—because for the last five years not one book, but a whole series of them has been part of our lives. In creating these books there were discussions and there were arguments. There were acceptances and rejections. We constantly asked questions—of ourselves and others. "What is the best current practice? How can we do better what has been done before? What new materials are available for use?" The authors, editors, and illustrators did all they possibly could to bring you books that would be as fine as possible.

Here is the result—the new

English in Action Program
For Grades 7–12

By Tressler, Christ, Shelmadine, Terino, Starkey, and Paige. Texts, Teacher's Editions (text, manual, complete answer book), Teacher's Manuals and Answer Books, Practice Books, Teacher's Editions of Practice Books, and Supplementary Tests.

D. C. HEATH AND COMPANY
182 Second Street, San Francisco 5

CALIFORNIA JOURNAL OF SECONDARY EDUCATION

EDITORIAL BOARD—1959–60

Earl P. Andreen, Principal, Lincoln High School, San Diego. Chairman of the Editorial Board 7/61*

Robert N. Bush, Professor of Education, Stanford University; Editor, Ex-Officio Member of Editorial Board 7/60*

William N. McGowan, Executive Secretary of CASSA, Secretary of Editorial Board 7/60*

Grant W. Jensen, Principal, South High School, Bakersfield, California; President, California Association of Secondary School Administrators 7/60*

Frank B. Lindsay, Chief, Bureau of Secondary Education, Division of Instruction, State Department of Education, Sacramento

Edward H. Redford, Dean of Instruction, Oakland Junior College, Oakland, California 7/60*

Norman B. Scharer, Superintendent of Santa Barbara (California) City Schools 7/61*

Herman A. Spindt, Director of Admissions and Relations with Schools, University of California, Berkeley 7/62*

* Date term of office expires.

EDITORIAL OFFICE—Cubberley Building, Stanford, California

Robert N. Bush.....Editor
Frank B. Lindsay.....Chief Consultant Editor

BUSINESS OFFICE—1705 Murchison Drive, Burlingame, California

William N. McGowan.....Managing Director

SOUTHERN CALIFORNIA
Summer Sessions
JUNE 20 TO JULY 29; AUGUST 1 TO AUGUST 27

Distinguished faculty offers graduate and undergraduate courses leading toward degrees, credentials, and professional advancement. Sessions include conferences and workshops. Comfortable rooms are available on campus. For Bulletin SS-8 write to:

DEAN OF SUMMER SESSION
UNIVERSITY OF SOUTHERN CALIFORNIA
Los Angeles 7

Year 1960–61

THE CLARK-BREWER TEACHERS AGENCY

505 Columbia Bldg., Spokane 4, Wash.

We Canvass the Nation for Good Teachers Who wish to teach in *Western States* including *Alaska* and *Hawaii*.

Administrators in many *States* contact us for *Good Candidates*.

Free Registration for teachers. Write for particulars. Mention this *Journal*.

Member: National Association of Teachers Agencies (NATA).

Phone: MAdison 4-1403 C. J. Cooil, Mgr.